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the OIL AND GAS JOURNAL

OCTOBER 28
1937

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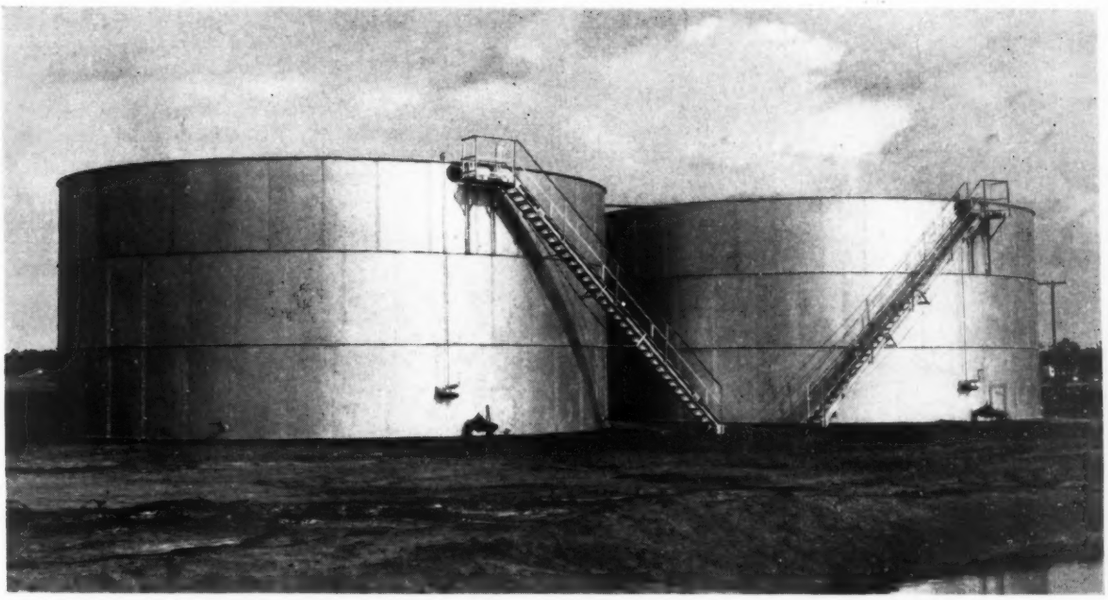

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The new MALONEY Separator—most recent addition to the MALONEY Line—represents a definite advance in separator design, offering several new and valuable features.

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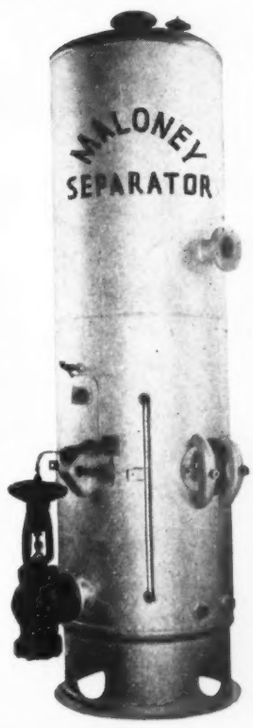

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For many years the Union Wire Rope Corporation and the Jarecki Manufacturing Company have been *working together* to meet your wire line requirements. UNION—as the manufacturer—has been meeting your need for *extra-durable* wire lines, while JARECKI has been serving you as the principal distributor of UNION Lines.

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The photograph shows the new JARECKI Store at Gladwin, Michigan. The men, left to right, are: L. M. Noble, Jarecki store manager; F. A. Donaldson, Union Wire Rope Corp.; L. P. Julien, E. P. Freesner and L. R. Blosser—Jarecki store employees.

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The "ULTIMATE LOW COST WIRE ROPE"

the OIL AND GAS JOURNAL

PUBLISHED WEEKLY BY THE PETROLEUM PUBLISHING COMPANY AT TULSA, OKLAHOMA

OCTOBER 28, 1937 VOL. 36, NO. 24

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AN OPEN LETTER to—

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The majority of you operators who are active in the present "play" in Illinois and Western Indiana are, from past experience in other fields, well acquainted with Baker Equipment.

We will merely emphasize, therefore, the fact that the new Illinois-Indiana fields present the same problems that confronted you in the Mid-Continent and Texas fields. In short, profitable operations depend, to a large extent, upon using the safest and most efficient equipment available.

You have relied upon Baker Equipment in other fields --- and it has proved itself time and time again. The line of Practical and Dependable oil tools bearing the name "BAKER" is again ready to help make your operations in this new field both Profitable and Permanent.

BAKER OIL TOOLS, INC.

BAKER CABLE TOOL CORE BARREL
(Left) The choice of modern cable tool operators for securing complete, uncontaminated cores. It's easy and economical to operate and popular with the driller.

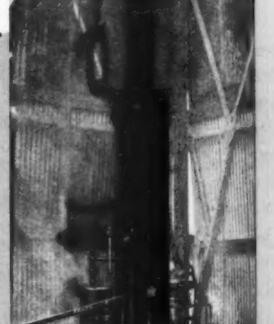
BAKER ROTARY WALL SCRAPER
(Right) A safe, dependable tool for enlarging walls of an open hole to a diameter greater than the casing through which it is run. Has strong, safe construction plus amazing reaming capacity.

BAKER MODEL "B" DRILL PIPE FLOAT
(Above) Provides a safe, efficient back pressure valve in the drilling string. Valve Assembly is constructed entirely without threads—the assembly being merely dropped into place in the body without the aid of wrenches or special tools. The most efficient drill pipe float made.

BAKER CEMENT RETAINER
(Left) Provides a better, safer, quicker way to do Squeeze Jobs: Recement: Cement Behind Sections of Pipe; Cement in Series: Plug Off Bottom Fluids: Test Upper Cased Formations. Also used as Casing Bridge Plug.

Illinois and Indiana operators not familiar with Baker Equipment will find complete information in the Baker Section of the 1937 Composite Catalog — and also in the large Baker Catalog, gladly sent upon request.

BAKER OIL TOOLS, INC.



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A highly efficient and easily operated device for straightening Kelly or drill pipe as it hangs suspended in the derrick. *The entire unit is completely portable.*

BAKER BAKBLU CEMENT FLOAT SHOE
Sectional View
Note internal construction of Baker-Formula Concrete and Bakelite. Here is . . .
STRENGTH
VALVE EFFICIENCY
DRILLABILITY

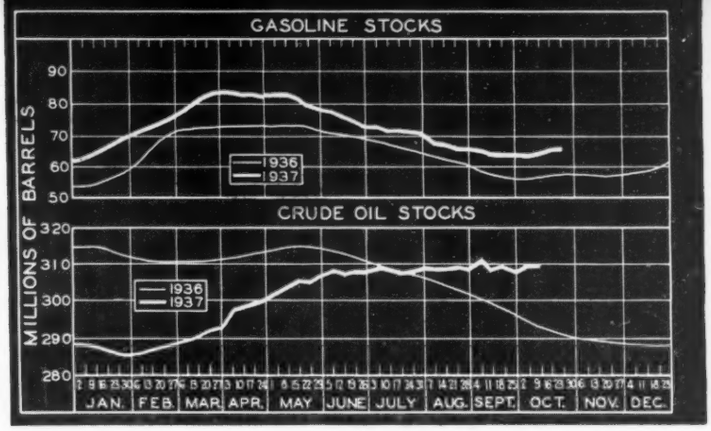
BAKER BAKBLU CEMENT FLOAT COLLAR
Meets the demand of those operators who prefer to stop the cementing plug one or two joints above the shoe, thus retaining cement tailings in the casing below the valve. Has same strong, safe construction as Bakblu Cement Float Shoe.

BAKER BAKBLU CEMENT GUIDE SHOE
This strong, safe casing shoe is made of seamless steel with a guide constructed of Baker-Formula Concrete. For successful results always use a Bakblu Cement Guide Shoe in conjunction with a Bakblu Cement Float Collar.

BAKER BAKBLU CEMENT UP-WHIRLER FLOAT SHOE
Affords the ultimate in cementing efficiency. Note side ports which direct cement slurry in a whirling mass up and around the casing, affording a better cement job with little danger of channeling.

BAKER BAKBLU CEMENT DOWN-WHIRLER GUIDE SHOE
A new shoe for running casing where bridges or formation obstructions are present. The side ports are very efficient during cementing.

SEE YOUR SUPPLY DEALER FOR BAKER EQUIPMENT



Better Tone in Crude Situation

A SLIGHTLY better feeling in regard to the crude oil situation is apparent among those closely in touch with developments. The more optimistic itude has not been extended to the point where these observers are certain that industry "is out of the woods," but they do feel that the important adjustment between summer and fall operations in the crude oil production end is being made. They are not expecting general price changes provided continued adjustments are made in line with the seasonal requirements.

CRUDE PRODUCTION *3,622,798 barrels daily average—up 1,298 barrels.*

CRUDE STOCKS *309,009,000 barrels as of October 9—down 27,000 barrels.*

GASOLINE STOCKS *66,554,000 barrels as of October 23—up 794,000 barrels.*

REFINERY RUNS *3,380,000 barrels daily average past week—unchanged.*

On the optimistic side is the Bureau of Mines estimated demand for November, which shows a 12 per cent gain in crude oil requirements over November, 1936, with a 10 per cent crease in motor fuel requirements. This report tends to nullify the current dictions that a slackening in general business activity will be immediately lected in gasoline and crude oil demand. In this connection market students nt to the record of the business depression which started in the fall of 1929. that period gasoline consumption continued to show the normal gain in demd over the previous year for several months and the 1931 domestic consumpn of motor fuel was greater than in the boom year of 1929.

Reports the first of the week indicated that the larger oil-producing states, h the possible exception of California, will keep their November production se to the Bureau of Mines recommendations. The Texas Railroad Commisn, with its own estimate of demand, has announced an allowable for the rt of the month of 1,351,677 barrels daily, which is 61,323 barrels under the vernment's recommendations.

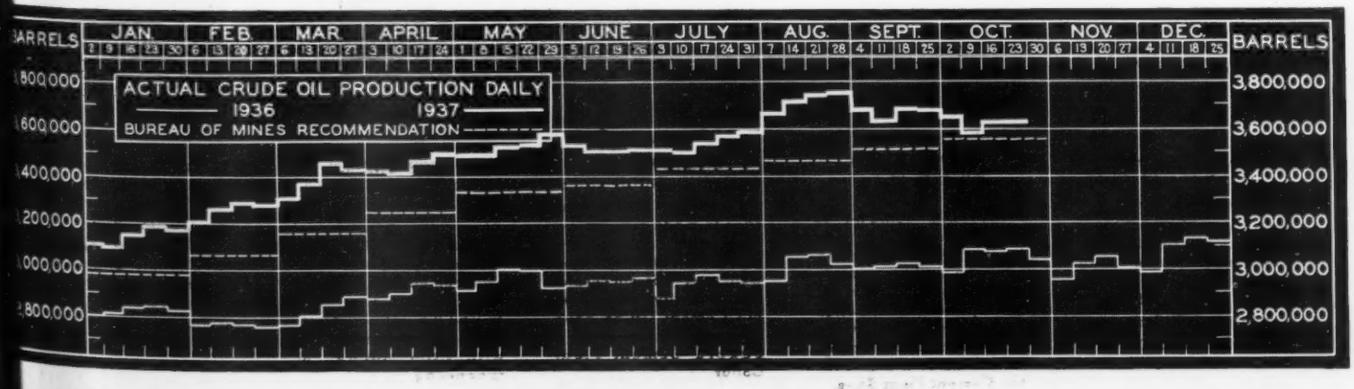
There are still local conditions involving excess crude supplies which have been ironed out entirely. With the decline in national production, however as been possible to take care of some of these situations, through changes the movement of both crude and refinery products, and this improvement will ntinue provided current crude supplies are kept at the demand levels.

At this time the crude situation is in better shape than the refinery division. The gasoline market is reported weak in practically all areas with the exception of California and there have been minor concessions in tankcar sales. There has been no dumping of large supplies by major refiners and no indications that this will happen in the near future. Smaller refiners are not willing to store at this time and their offerings are not readily absorbed in the Mid-Continent and other areas. If this situation continues these operators will curtail their output and additional spot crude will be available.

Daily Average Production for Week

	Oct. 23 1937	Bur. Mines Oct. est.	Oct. state allowables	Oct. 16 1937
Oklahoma City	141,050	.....	.....	144,750
Fitts	79,325	.....	.....	79,950
Remainder of state	369,400	.....	.....	370,725
Total Oklahoma	589,775	629,200	600,000	595,425
East Texas	486,000	.....	.....	488,498
West Texas	215,697	.....	.....	214,000
North Central Texas	109,400	.....	.....	109,000
Texas Panhandle	79,000	.....	.....	78,747
East Central Texas	109,197	.....	.....	109,048
Gulf Coast Texas	351,048	.....	.....	349,050
Southwest Texas	120,100	.....	.....	119,449
Total Texas	1,470,442	1,430,300	1,416,789	1,467,792
North Louisiana	73,900	.....	.....	73,260
Gulf Coast Louisiana	170,800	.....	.....	173,600
Total Louisiana	244,700	254,600	266,700	246,860
California	704,750	660,000	660,000	699,250
Kansas	185,875	199,900	193,800	191,000
Arkansas	46,955	36,000	.....	42,985
Eastern fields	137,600	128,800	.....	137,000
Michigan	54,261	43,500	.....	53,618
New Mexico	104,060	106,400	104,000	104,030
Rocky Mountain area	84,380	79,400	.....	83,540
Total United States	3,622,798	3,568,100	.....	3,621,500

Increase, 1,298 bbls. daily.



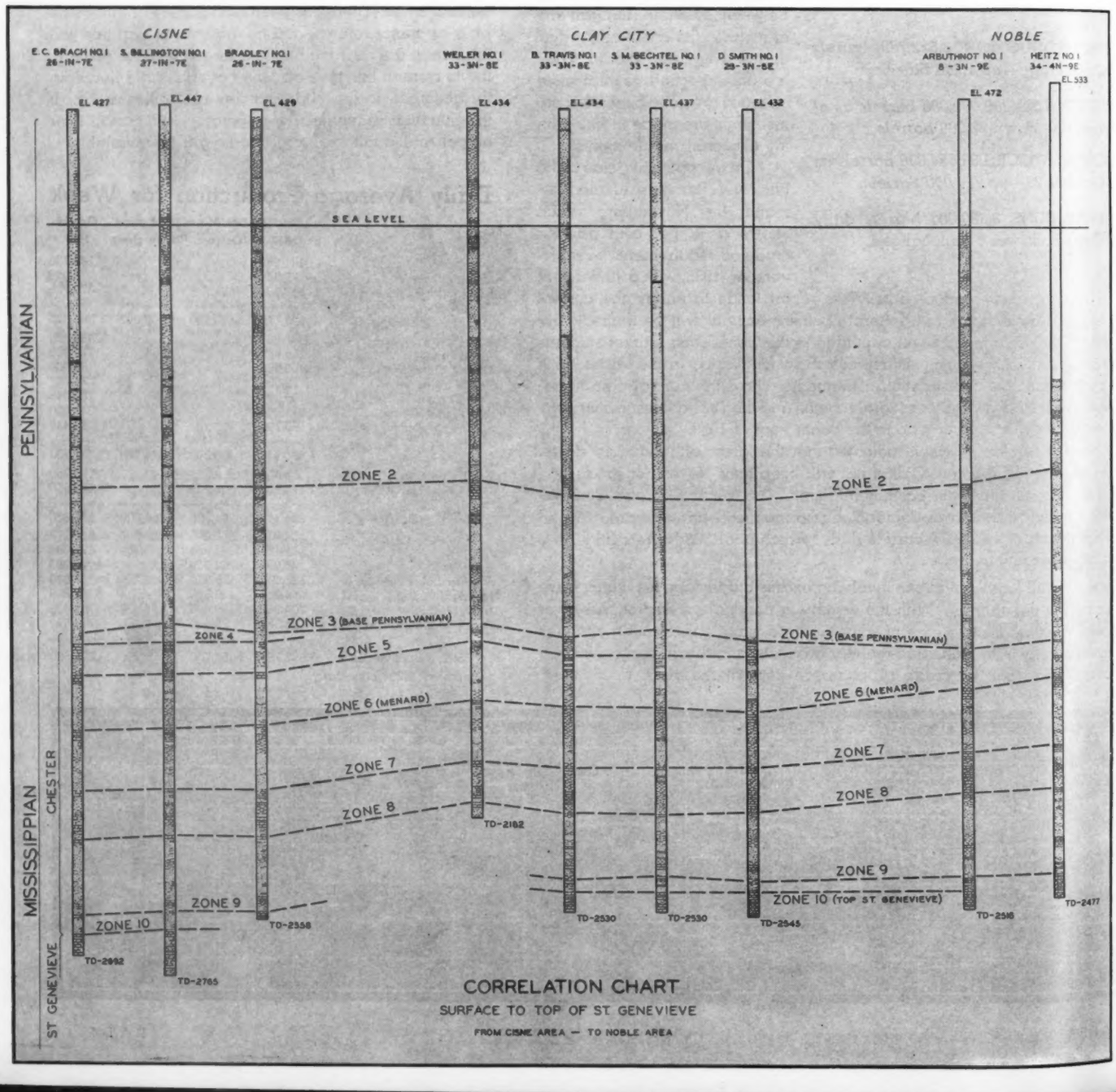
Recent Oil Discoveries in Southern Illinois

By THERON WASSON
Chief Geologist, Pure Oil Co.

New oil fields are under development 30 miles west of the old southeastern Illinois fields. The first discovery was near Cisne in Wayne County; the second near Clay City in Clay County. These first discoveries, which were completed in March, 1937, were 12 miles apart. The Noble field, discovered in July, is 6 miles northeast of Clay City. Recently new discoveries have been made 2 miles northeast of Noble. From Cisne to the new area northeast of Noble oil has been found in five separate areas in a belt over 20 miles long. The old fields of southeastern Illinois, which extend for 60 miles across Clark, Crawford and Lawrence counties, have had continuous development for over 30 years. They have produced 400,000,000 bbls. of oil. The general geological conditions affecting southeastern Illinois have been known for over 100 years.

While the new area appears large and boom conditions now prevail, we should not lose sight of the fact that these are typical Illinois fields. The old fields of Illinois have made their production from small long-lived pumping wells. The same will be true in the new fields, 30 miles away.

Illinois Basin Section
starting on page 71 includes additional information on this important new area.



CORRELATION CHART
SURFACE TO TOP OF ST. GENEVIEVE
FROM CISNE AREA — TO NOBLE AREA

Production is coming from the McClosky, an oolitic limestone of the Ste. Genevieve, which is well known in the fields of Lawrence County. The new development has gone far enough to demonstrate that dry holes will be found offsetting big wells. From experience in the old fields we know the flowing life will be short. Decline will be rapid in the first months of production and the area as a whole will make its oil from wells that are on the beam, or pumping from a central power.

The Area

The area under discussion, which includes parts of Wayne, Clay, Richland, Jasper and adjacent counties, is 60 miles long and 30 miles wide. It is a flat farming region, rather thickly settled by people whose pioneer ancestors came into the region from Kentucky and Virginia. This territory has an elevation of about 500 feet above the sea. Drainage is into the Wabash Valley by streams flowing southeastward. From south to north across the area the Little Wabash and the Embarrass are the principal streams. The B. & O. Railroad runs east and west, and the Illinois Central north and south through the area under discussion. The main towns

A.A.P.G. — Presented before American Association of Petroleum Geologists, Pittsburgh, Pa., Oct. 14-16, 1937

from south to north are Fairfield, Olney and Newton. The city of St. Louis is 100 miles west and Chicago 250 miles north of the first discoveries.

As shown in the map, the Cisne field is in north central Wayne County; the Clay City field in southeastern Clay County; the Noble field and its northeastern extension in western Richland County.

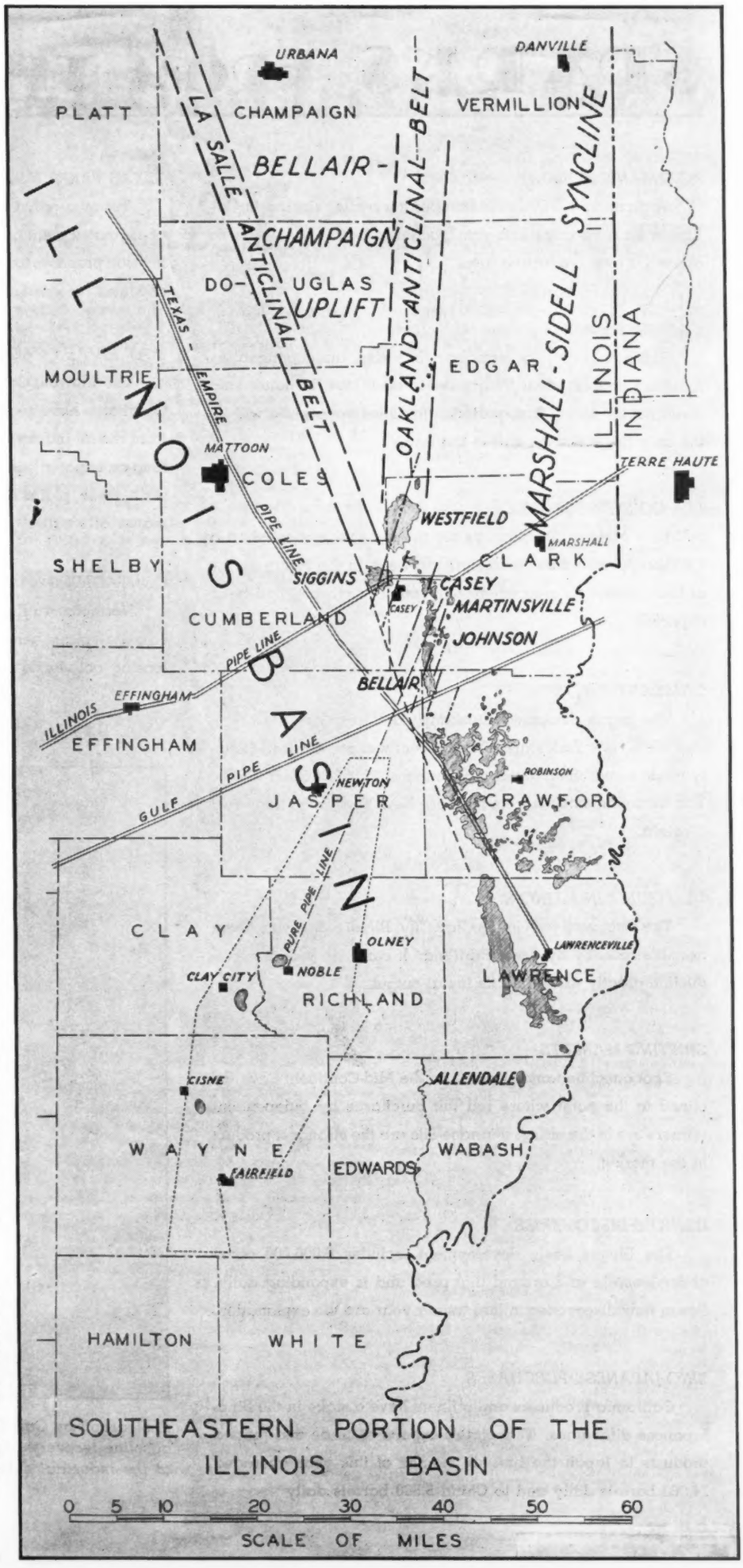
General Geology

Geologists familiar with this territory know that the relatively flat plain has a surface cover of glacial drift about 50 feet thick, consisting of unconsolidated sand and clay left upon the retreat of the ice sheets which once covered it. This mantle of glacial material has covered the bed rock to such an extent that it is impossible to do any detailed surface mapping. The old southeastern Illinois fields are on the La Salle anticline, which has been outlined by drilling in the southeastern counties and by studies of rocks exposed on the surface near La Salle. Early oil explorers venturing west from the fields of Crawford and Lawrence counties soon lost interest after drilling into salt water at depths comparable to those at which they found oil in the old fields. Very few tests went deeper than 2,000 feet. Both Blatchley and Mylius in mapping the subsurface conditions in the old fields showed a rapid dip to the west, and other publications of the state survey have outlined the La Salle anticline in considerable detail, calling attention to the steep dip on the west side and the rather flat east side.

Exploration for Structure

Following the discovery of oil in Michigan in 1927, the geological department of the Pure Oil Co. became interested in the Illinois Basin and for the first time became acquainted with the staff of the Illinois Geological Survey. As a preliminary study, a cross-section was prepared from Lawrenceville to St. Louis. The published logs of old wells were used for this section. It showed a disturbance in the area between Flora and Olney. This suggested structural feature was not given great weight because there was a chance for error

(Continued on Page 40)



SPARKS FROM THE NEWS

POSTMAN'S HOLIDAY

A prominent Mid-Continent operator while relaxing in California on a vacation last year bought a lease. Last week he opened a new productive area.

CAPACITY LIMIT

Refiners installing mammoth cracking and combination units are causing steel fabricators to do things the latter said could not be done. Transportation facilities apparently will be the only restriction on size in the future.

LEA COUNTY SURPRISE

New Mexico oil operators sat up and took notice when a 2,800-barrel well was completed last week in the Henry sector of Lea County, an area where only small production had been expected.

ORISKANY OUTPUT

The much discussed Oriskany sand appears most productive in New York state. Three recent wells in Steuben County made a combined initial production of 75,000,000 feet of gas. The formation extends from northern New York down into West Virginia.

DEEPENING IN ILLINOIS

The discovery well in the Clay City, Illinois, pool was given new life recently by deeper drilling. It came back with a production greatly exceeding its initial output.

SHIFTING MARKETS

Spot gasoline tankcar prices in the Mid-Continent have declined to the point where red ink purchases by independent refiners are in the offing. Furnace oils are the strongest product in the market.

ILLINOIS DISCOVERIES

The Illinois Basin development includes 6,000,000 acres under lease in and around that area and is expanding daily. Seven new discoveries in less than a year are the explanation.

SINO-JAPANESE PURCHASES

California producers and refiners have a stake in the Sino-Japanese difficulties. That state's exports of crude and refined products to Japan the first six months of this year averaged 74,000 barrels daily and to China 5,500 barrels daily.

TEXAS TAKES NOTICE

Texas is either hot or cold. After producing far in excess of estimated demand for many months, the state's railroad commission proposes to curtail 61,323 barrels daily under the Bureau of Mines recommendation in November.

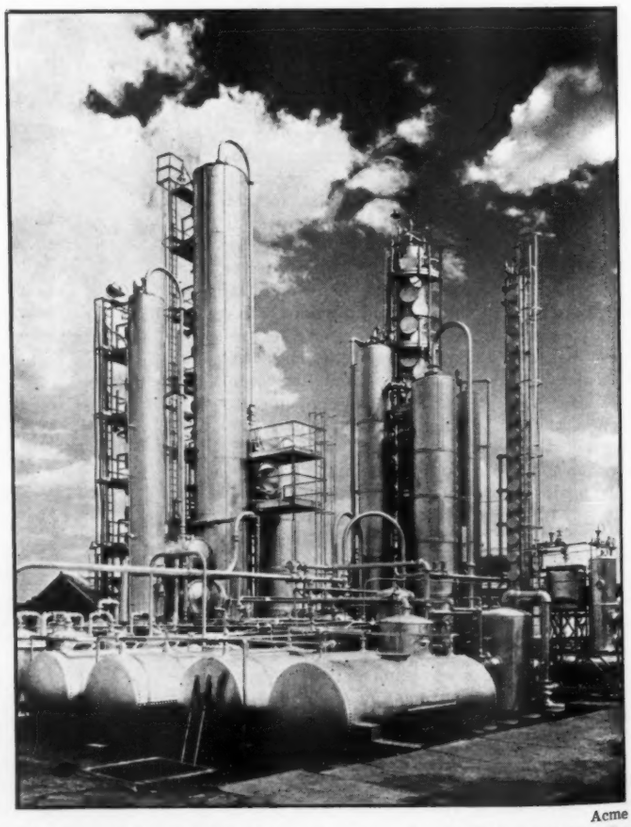
MAY RIVAL OSAGES

The Kiowas, Comanches and allied tribes of southwestern Oklahoma have received more than $1,500,000 in lease money from the oil industry in the past nine years. When, and if, the long-anticipated major oil strike is made in that part of the state these plains Indians may vie with the Osages in the matter of wealth.

CONTAGIOUS

Northeastern Kansas, largely neglected by the oil industry, now is feeling beneficial effects from the Illinois boom and leasing activity is gaining momentum.

REFINING BECOMES ARTISTIC



Acme

Photograph by Carl E. Fehrenbach, of the Continental Oil Co. gasoline recovery plant at Ponca City, Okla., won first award at the industrial exhibit of the National Photographers Association in Chicago

Admission of Grand Jury Testimony at Issue

By R. B. PYRE

MADISON, Wis., Oct. 26.—Defense attorneys renewed efforts today to be permitted access to testimony of grand jury witnesses for cross examination, but were denied.

Throughout the case the defense has objected to the reading of grand jury testimony to the trial jury in the guise of "refreshing the memory," even though the court explained it was not to be "considered as evidence." On recent days the court has read extracts of the previous testimony shown him by the prosecution instead of permitting the government attorneys to do so. In one instance Monday he declined to read the testimony, holding the questions were "too leading."

Today defense attorney H. H. Thomas objected that if the grand jury testimony is to be used only to "refresh the memory" it should properly be shown to the witness alone and not read to the jury, but the court overruled Mr. Thomas, charging he was employing a roundabout means of getting access to the entire record.

The court also rejected a government objection today to the action of the defense in contacting a government witness over-night to prepare computations. The purpose of any lawsuit is to bring out the truth, Judge Stone held, no matter who does it.

Julius C. Evans, Tulsa, assistant to the sales manager of Barnsdall, completed his testimony (reported elsewhere), at noon Tuesday and was followed by Neil Buckley of Tulsa, field representative of Cities Service Export Oil Co. also called as a government witness.

Check Aids Defense

Decidedly the most important development of the third week in the oil trial was an inadvertent bit of testimony brought out by the government itself which opened the door, partially at least, to a defense of the companies that their "price stabilization" activities had governmental authority under the NRA petroleum code.

After a bitter argument of more than an hour, during which 50 or more clamoring attorneys milled about the bench in the absence of the jury, Judge Patrick T. Stone ruled the defense might interrogate Walter P. Jacobi, government witness, to learn all he knows regarding authority.

The court declined temporarily, however, to permit introduction of a copy of the petroleum code which the defense had offered as proof of authority.

The way, through cross-examination only for the present, was cleared for the defense under a fundamental rule of court procedure that cross-examination may touch only upon matters gone into on direct examination.

It all came about when John H. Lewin, of the government staff, asked Mr. Jacobi who paid his expenses as "liaison man," or, as he designated himself, a stabilization subcommitteeman, in the "distress" gasoline buying program of the major companies among small refiners of the Mid-Continent field beginning in March, 1935.

Mr. Lewin was under the impression that Mr. Jacobi had told the grand jury his expenses were paid by his employers, Socony-Vacuum Oil Co., Inc., and Wadhams Oil Co. But Mr. Jacobi unexpectedly replied that until June of that year his telephone expenses were paid by the planning and coordination committee under the code.

Mr. Jacobi, a buyer of 15 years' experience in the Mid-Continent field, had been on the stand throughout the week when his direct examination was concluded at noon Thursday, and before his cross-examination began, Defense Attorney H. H. Thomas of Madison asked that the full transcript of his grand jury testimony be made available, but the motion was denied.

Then Col. W. J. Donovan, chief of the defense staff, announced a subpoena had been issued for the custodian of records in the planning and coordination committee, and asked if the person was in court. A man walked forward, drawing a paper from his pocket.

W. P. Jacobi, widely and favorably known throughout the Mid-Continent area, who completed his testimony at Madison last week. As a buyer for the Wadhams Oil Co. Mr. Jacobi over a period of 15 years has probably placed more business with the Mid-Continent independent refining industry than any other single individual. His company in recent years has been a subsidiary of the Socony-Vacuum Oil Co., Inc.

It was a check for $366.25, endorsed and canceled, bearing the printed masthead of the "Planning and Coordination Committee." It was signed by James D. Collett, of Fort Worth, Tex., as chairman and payable to W. P. Jacobi for the period ending May 31.

"Was the Planning and Coordination Committee appointed by the president of the United States?" asked Colonel Donovan, but the question and answer were ruled out under a government objection.

While the NRA was invalidated on May 27 by the U. S. Supreme Court, Colonel Donovan insisted upon the right to offer the check, pointing out the administrative board continued to operate for 60 days longer.

"Without authority," government counsel interjected.

"No, not without authority," the colonel retorted, and the argument was under way after Judge Stone had excused the jury.

Goldthwaite Dorr, representing Socony-Vacuum; Theodore Brazeau, of Wisconsin Rapids, Wis., of counsel for Cities Service Oil Co.; Weymouth Kirkland of Standard Oil Co. (Indiana), and Charles Francis of Pure Oil Co. all took vehement part in the discussion.

Throughout the trial, Mr. Brazeau contended, sight had been lost of the fact that this is a criminal, not an equity case.

"These men were led to believe what they did was lawful," he said. "We have a right to beat the government if we can by any legitimate defense. In an equity case an answer is filed to the complaint and the issues are defined and limited, but the only possible answer to a criminal charge is 'not guilty'." And that, he argued, opens up an unlimited field of evidence. "We have a right to show intent. We have a right to show agency as the part of our defense."

Prosecution View

But prosecution attorneys insisted the entire question was one of law, that the sole issue is price fixing in violation of the antitrust act, which defendants are charged with attempting, Mr. Lewin declared, "long after their authority ceased."

Under recent interpretations of the antitrust act, particularly in the Trenton Potteries case, he argued, the defendants may not even show the prices they fixed were reasonable and the doors are closed to them both as to "rule of reason" and that of "authority."

"Haven't they the right to show that they were acting honestly and in good faith, if they can?" the court inquired.

Mr. Lewin and his associate, Hammond E. Chaffetz, still maintained the defendants have no right to submit anything except the proper "written authority" defined at the opening of the trial.

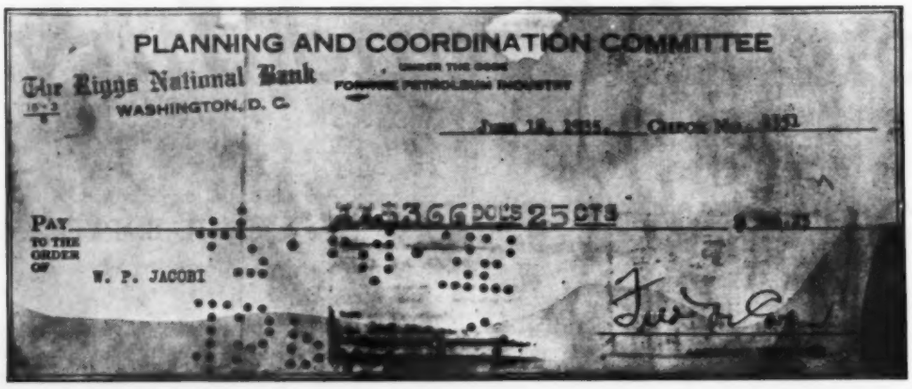
"This is a criminal case, not an administrative case in which you might fine us $10," Mr. Dorr declared, arguing the oil companies had sought only to restore the parity of price between crude oil and gasoline, which the government had been "trying and trying" to do and is still trying to do under the Connally "hot" oil act.

Mr. Francis pointed out that federally sponsored committees right now are attempting to fix coal prices under the Guffey act.

"If this law were found invalid, do you mean to tell me that under the form of government we have in these United States these men could not defend themselves by reason of authority?" he demanded.

Government counsel still insisted there was no parallel, but Judge Stone closed the argument:

"After all," he said, "these men are charged


PLANNING AND COORDINATION COMMITTEE
UNDER THE CODE FOR THE PETROLEUM INDUSTRY
The Riggs National Bank
WASHINGTON, D. C.
PAY TO THE ORDER OF
W. P. JACOBI

The check that partially opened the door for the defense to show efforts to bring about a "parity price" of gasoline were supported by authority of the government under the NRA petroleum code

with a crime. They have a right to show all circumstances surrounding their actions. They were in a serious predicament. They say they made an effort to save their industry. We will listen to their reasons for belief that they had authority."

When everybody had gone back to his seat, the court stated, for the record, "The defense may interrogate the witness."

The check was admitted as evidence when Mr. Chaffetz conceded on the government's part that there was no question of its authenticity.

Throughout Mr. Jacobi's direct examination, government counsel resorted frequently to his testimony before the grand jury last year to "refresh his memory," over repeated objections by the defense that it was a "prejudicial and unfair method of examination." While Judge Stone held the government had every right to do so in view of the fact Mr. Jacobi was a "reluctant and hostile witness," he held on each occasion the testimony of the witness was not inconsistent with that given before the grand jury.

St. Louis Meeting

Mr. Jacobi testified he was appointed, at a meeting of major company and small refinery representatives at St. Louis in March, 1935, as a subcommittee of the stabilization committee to contact companies in the Oklahoma, Kansas and North Texas fields, because he was in close touch with the small refiners. Other members of his group, he said, were O. J. Tuttle, tankcar sales manager of Empire Oil & Refining Co., and R. W. McDowell, vice president of Mid-Continent Petroleum Corp. It was hoped, he said, the market would respond to the removal of surplus gasoline, but he denied that was the major purpose of the "program." Defense counsel objected to repeated use of the word "program," but it was employed by the witness throughout his testimony, though he frequently injected the phrase, "during my stabilization work."

At the St. Louis meeting, he said he had bought gasoline from the Champlin Refining Co. at times during a 15-year period, and he agreed to take 40 cars of the Champlin surplus during March. In all, he testified, 600 to 800 cars of "distress" gasoline were to be purchased that month under the plan.

He denied purchases were "allotted," declaring each company bought according to its requirements and decided upon its own purchases.

He was called upon to name the alleged "dancing partners" who took part in the program and to amplify his testimony in regard to weekly prices to be paid "dancing partners."

During the early part of 1935, from March to June 7, he said, a weekly increase of one-eighth of a cent a gallon was recommended as a rule, but his subcommittee made no further price recommendations to major companies from that time to the end of the year.

Asked to explain the term "dancing partners," Mr. Jacobi said it had been used by H. T. Ashton, his superior, at the St. Louis meeting. The situation there, Mr. Ashton had said, seemed to him to resemble a ballroom with "a lot of wallflowers sitting around" because they had nobody to dance with, while others present wanted to dance but had no partners, and he suggested "it would be a good thing" if the partners and wallflowers would get together so "everybody would have a good time."

Mr. Jacobi testified the buying program, which the government charges was an essential phase of the defendant companies' alleged conspiracy to "rig" the market, continued through April, 1936.

"What happened after April, 1936?" Mr. Lewin inquired.

The question came at a tense moment, further intensified when Mr. Jacobi replied, "I don't know."

As far as he was concerned, he discontinued his own "distress" gasoline buying activities after he had appeared before the grand jury in May, he said.

After the buying plan was first discussed at St. Louis, he testified, 12 other meetings were held, some attended by the same men, members of C. E. Arnott's "stabilization" committee, while his subcommittee, of which Mr. Tuttle was chairman, held several other meetings to discuss prices.

Price Quotations

Some of the meetings were held at the Blackstone Hotel in Chicago, others at St. Louis, Excelsior Springs, Mo., and Tulsa, in the offices of the Western Petroleum Refiners Association. The last was held February 27, 1936, in Chicago, he declared. At these meetings a survey usually was presented by A. V. Bourque, secretary of the refiners association, he said, showing the amounts of gasoline to be purchased.

His examination then turned to the relations between the prices paid by the major companies for "distress" gasoline to the trend of prices published in trade journals indicted on charges of conspiring with the defendant companies to raise the tankcar price. Reports had come to his committee, he said, that certain "hard boiled buyers" representing some of the major companies were trying to buy "distress" gasoline below the going price. It was feared, he said, if the practice was continued it would have a detrimental effect.

"Our idea was to pay a fair price for 'distress' gasoline," he explained, "and it was felt if some of the companies continued to buy below the market the journals would hear of it and publish the prices, then the smaller buyers would become discouraged and other buyers would hold off." The gist of their discussion at the meeting, he added, was that "I felt that prices would go lower."

Nothing was said, he insisted, about any suggestion to his committee from the journals, the only suggestion having come from the small refiners. It was suggested to the committee, he continued, that if they paid fair market prices instead of "distress" prices the higher prices would reflect the trend of the market and the small refiners would be able to ask and obtain better prices from jobbers. And it was hoped, Mr. Jacobi said, that if fair prices were paid the journals would hear of them and publish them.

At the meeting on March 14, he testified, his committee arrived at a "fair market price" for the following week at 3¾ cents a gallon for third grade and 4¾ cents for regular gasoline which, he said, represented about one-eighth of a cent above that week's tankcar price. He called up Sinclair, Pure Oil, Globe and Shell companies to inform them of the suggested price, he said, and he presumed Mr. McDowell and Mr. Tuttle similarly advised other major companies.

He didn't call up the major companies to learn whether or not his suggestion was followed, but he learned from the refiners the companies were paying approximately the price proposed. He watched the journals and noted the gradual increase in their price quotations, but didn't remember how many changes occurred from March to June, 1935.

"How did the trend of prices on your purchases in this program from June to November compare with the journal quotations?" Mr. Lewin asked.

No Agreement on Prices

The trend was the same up to December, Mr. Jacobi answered, but through a long interrogation he insisted there was no "agreement" in regard to the prices suggested.

Each major company was asked monthly to indicate whether or not it could purchase gasoline from its dancing partner, he testified, and if it could not, arrangements were attempted to have some other company take the surplus.

While he couldn't recall all the "dancing partners," he named Waggoner Refining Co. as that of Standard of Indiana; Champlin, Danciger and Wilcox companies for Socony-Vacuum and Wadhams; Panhandle and Eason for Sinclair; Cushing for Shell Petroleum; Taxman for Phillips Petroleum; Johnson Oil & Refining for Mid-Continent; Shamrock Oil & Gas for Continental; and Rock Island for Skelly Oil. He didn't know who were the partners of Barnsdall and Globe companies, he said, these major companies being on the list which he enumerated as having bought in the Mid-Continent program.

Mr. Jacobi testified there were incidental sellers in the program, including Russell Refining Co., and some brokers, among whom he named D. W. Moore of Tulsa and Tansel Petroleum Co.

"Did you make purchases to prevent these brokers from selling at lower prices?" Mr. Lewin asked.

"We thought it advisable to purchase that gasoline, yes," the witness answered.

Mr. Jacobi denied the size of the various companies had any relation to the amount of gasoline they were to buy, or that he was governed in his own purchases by what he considered a "fair share," but admitted such a consideration was a secondary motive.

Repeated claims of the defense that there was no "program" or "pool" in the buying operations were attacked by the government through photostatic copies of 27 weekly "market letters" sent by Mr. Jacobi to Wadhams Co. in Milwaukee and to various division offices of its parent, Socony-Vacuum company. Their introduction concluded the

direct examination of the witness. Only a few were read into the record at the time.

One, on March 8, 1935, to A. D. Maguire. chairman, Wadhams company, commented that the crude oil situation was stronger, due to improved conditions in East Texas and commented upon a federal court decision sustaining tender boards as an important development. Then it continued, in part, "The buying pool has started operations, and the various companies are placing orders" and reported that McDowell, Tuttle and "the writer have been asked to serve in this area as a steering committee on pool matters." It also said "prices already have started to reflect a better frame of mind, and third-grade gasoline has advanced sharply this week to 3½ cents. A 3⅝-cent price is expected shortly."

Bought From Others

Mr. Jacobi testified that at times during the buying program he purchased gasoline at prices lower than those which he and his subcommittee had proposed from week to week.

He bought some gasoline from independent refiners other than his dancing partners, he said, and bought some gasoline on the basis of the trade publications as well as the spot market.

"At prices lower than you paid to your dancing partners?" Mr. Lewin inquired.

"I paid all kinds of prices," Mr. Jacobi answered.

"Some were lower?"

"I remember some instances, yes."

"Was there some question of lower specifications on that gasoline?"

"No, sir, I never bought anything except in our specification range."

"Didn't you buy from Danciger at an eighth of a cent below the price you paid to other dancing partners?"

"I may have done so. I had been doing business with them for many years. There was no obligation on my part to pay any set price."

And he explained that some of the gasoline so purchased was "additional gasoline."

He showed caution both on direct and cross-examination in regard to the factors which brought about the crude oil advance of 10 cents and 15 cents, respectively, in the two fields over the dollar posted price of crude. Having written in his weekly letters that jobbers were curtailing their purchases, he denied upon questioning by counsel for the journals he had any knowledge as to effect broker purchases exerted upon the market at any time. The government seized upon this to point out the only other influence could have been the purchases of gasoline by the majors from the independent refiners.

Cross-examination of Mr. Jacobi emphasized the relation of the prices paid by the majors to their "dancing partners" to the prices published in the journals which are charged with publishing the prices paid by the majors as "spot market tankcar quotations."

The defense sought to show, through two large charts prepared by the witness, that prices asked by the refiners from jobbers after the help received in removing distress gasoline were the controlling influence upon market quotations, and that the prices paid by the majors in their purchasing followed the published prices upward rather than vice versa, as claimed by the prosecution; that while the up and down trend of the prices paid may have paralleled the trend in the journals they were on a different plane, and that the journals' prices had been higher for several days before those paid by the majors went up.

Mr. Jacobi showed he made three purchases of third-grade gasoline in December, 1935, at the average price published by the Chicago Journal of Commerce and Platt's Oilgram, but declared all other purchases he made in that year were at or below the low prices published. He made 46 purchases at the low of the averages of the two journals, and 78 purchases below the averages reported by the publications, he said.

He agreed the two journals "truthfully reflected the increase in the spot jobber market at all times." When Colonel Donovan asked if the price to be paid during each week was decided upon the average of high and low prices published in the journals during the preceding week, Judge Stone interjected a question.

"Was that actually the way you arrived at prices?"

"We discussed prices with many people, and had word from small refiners as to what they were getting from jobbers," Mr. Jacobi replied, "and from that we got our idea of a fair market price."

The "going price" in the journals was followed throughout, he said, so "chiselers" could not cut in on the market.

Colonel Donovan asked the witness if Mr. Ashton, at the St. Louis meeting in March, 1935, had not stated to all present that it was held on authority of the stabilization committee appointed by Mr. Arnott, member of the "P. and C. committee" under the code.

Mr. Jacobi answered affirmatively, and he testified further that Mr. Ashton had explained the plan did not involve any pool buying; that the companies to be asked to participate had bought in the Mid-Continent market for several years; that there were to be no definite "assignments" in monthly quantities to the various buyers but all purchases were to be voluntary, each company to contact a particular seller for purchase only of such gasoline as met its requirements.

The function of himself and his fellow committeemen, he said, was to cease after they had put the buyer in touch with the seller.

Mr. Ashton further suggested, he said, that the major companies "ought to pay a fair market price," as contrasted with a "distress" price, and the facts were mentioned that the Connally act was in effect, federal tender boards had been in operation several days, and prices already were on the upgrade.

"Distress" Prices

In connection with Mr. Ashton's advice against "distress" prices, Colonel Donovan asked if it was not true that in the past it had been the practice of some buyers to "beat down" the refiners' price.

"Yes, I have done it myself," said Mr. Jacobi.

"Did you have a reputation as a hard trader?"

"I think so, yes," the witness answered. "I aimed to get the best price I could."

On redirect examination, the government turned to a new attack, seeking to show that "secrecy" surrounded the activities of the distress gasoline buyers, Mr. Jacobi admitting that no secretary was appointed and no minutes were kept. It was not his duty to suggest it, he said, and if he made any memoranda himself during the meetings, he had "thrown them away."

Before court adjourned over the week-end, the prosecution introduced another series of letters, all exchanged between executives of the Skelly Oil Co., in support of the indictment charge that purchases among the small refiners were allocated to the various majors and that a part of the agreement provided the refiners should curtail their output.

One letter, from James Nagle, of Tulsa, to W. T. Atkins, of Kansas City, reported Russell Refining Co., which had a daily gasoline output of 300 bbls., had applied for membership in the Western Petroleum Refiners Association. The company had been told by Secretary Bourque, it added, that the Russell people "would have to prove themselves" and their willingness to "play ball" on output, but it said Mr. Bourque had promised them "consideration in the picture for January."

The letter continued that "he doesn't know what you and I know, and I didn't tell him," that the resulting loss from the company's interrupted use of "our pipe line" would be made up by "the

(Continued on Page 40)

Headquarters of counsel for defendants occupy two floors of this building at Madison, known as Bank of Wisconsin Building. Federal courthouse one block away

Texas Mid-Continent Oil and Gas Association Annual Meeting

DALLAS, Tex.—The annual convention of the Texas Mid-Continent Oil and Gas Association, to be held here Friday and Saturday, October 29 and 30, will open with Jake L. Hamon, president, as general chairman. The principal speaker will be Matthew S. Sloan, chairman of the board and president of the Katy Railroad, who will speak on "The Texas Oil Industry's Influence Upon the General Economic Welfare of the State." Other speakers on Friday's program include George C. Gibbons, executive vice president of the association; J. C. Hunter, vice president, Abilene; Paul W. Pitzer, vice president, Breckenridge; John P. Morgan, tax counsellor, Sun Oil Co., Dallas; Guy L. Tate, secretary, Magnolia Petroleum Co., Dallas; Raymond M. Myers, tax attorney, Magnolia Petroleum Co., Dallas.

R. S. McFarland, vice president of Seaboard Oil Co., Dallas, is chairman of the nominating committee. Distinguished service awards for service to the Texas oil industry will be presented by Charles F. Roeser, president, Independent Petroleum Association of America, Fort Worth, and Joe S. Bridwell, independent operator of Wichita Falls.

There will be a special meeting of oil tax men Saturday morning, October 30, with H. L. Stone, tax department, Humble Oil & Refining Co., Houston, as chairman. Speakers include Glenn Thompson, Tide Water Oil Co., Tulsa; George Foster, Texas Co., Houston; Al Buchanan, drilling contractor, San Antonio; H. Hunter, independent oil operator, Kilgore.

Pennsylvania Dealers Form New Gasoline Association

HARRISBURG, Pa. — Some 100 delegates claiming to represent 30,000 retail gasoline dealers formed the Pennsylvania Petroleum Dealers Association here last week and decided to petition the state to regulate their industry and control prices.

A resolution declared state action was necessary "so that service station operators, their employes and families may enjoy a fair return for their labors and the consumers of gasoline be given fair and decent treatment."

Ray Chamberlain, of Bradford, was elected president. John Lamberti, of Scranton executive secretary, and Frank Ellis, of Pittsburgh, treasurer.

Withdrawal Decline Curve Attacked in Kansas Court

Suit has been filed in district court at Lyons, Kans., by Continental Oil Co. against the Kansas Corporation Commission, seeking to compel discontinuation of the composite withdrawal decline curve in determining allowable production in the Geneseo pool, Rice County. The company, which owns the bulk of production in the Geneseo area, maintains that the decline curve is an arbitrary method of determining allowable withdrawals and does not reflect individual pool conditions except in Siliceous lime pools from which the curve was determined. The company asks for physical tests to be the basis of determining Geneseo production.

Order on Heat Application In East Texas Area Issued

AUSTIN, Tex.—The Railroad Commission has made an order prohibiting application of heat to East Texas crude before it is measured for allowable, except where wells are making emulsion. Heat applied indirectly in the gun barrel, after separation of oil and gas is limited to 125 degrees; applied directly or indirectly after initial separation of oil and gas, limited to 140 degrees; applied during initial separation, limited to 135 degrees; applied prior to initial separation, limited to 140 degrees. Pressure not less than atmosphere to be held prior to time oil is measured.

Asphalt Paving Conference At Memphis, December 6

More than 700 highway officials, engineers and asphalt technicians are expected to participate in the seven sessions of the eleventh National Paving Conference, starting in Memphis on December 6, sponsored by the Asphalt Institute and the Association of Asphalt Paving Technologists. The program provides for business and technical sessions of the Asphalt Paving Technologists and a meeting of the Asphalt Institute Board on Monday, December 6, followed by an informal reception.

Gulf Refining Co. Line to Jefferson in Operation

SHREVEPORT, La.—After smoothing out difficulties with the Jefferson and Northwestern Railroad for right of way under its tracks in the Jefferson area of the Rodessa field, Gulf Refining Co. has put its new 6-inch line into that sector in operation. This extension line runs east to connect with its Rodessa system proper.

Practical Suggestions Brought Them One-Year Subscriptions

In recognition of the most valuable ideas in a group of suggestions contributed to make The Oil and Gas Journal still more helpful to the practical oil man, The Journal takes pleasure in awarding a free one-year subscription to each of the following readers:

Bert Blair, San Antonio, Tex.; J. M. Bule, Hobbs, N. Mex.; W. C. DeArman, Port Arthur, Tex.; Carl V. English, Pampa, Tex.; F. S. Henderson, Port Arthur, Tex.; George E. Kegler, Eunice, N. Mex.; G. D. Lambert, Wakeeney, Kans.; Frank Liebe, McPherson, Kans.; D. J. McAuliffe, New York City; N. Allen Riley, Plains, Tex.

American Association of Petroleum Geologists at Endless Caverns lodge in Newmarket, Va., on a field trip preceding the fifth semiannual meeting in Pittsburgh, Pa.

THE MARKETS*

CRUDE OIL: *The fact that national crude oil production has been practically in balance with demand in recent weeks with prospects that this situation will continue in November has brought better feeling among major buyers. Decline in gasoline prices may result in shutting down of several small refineries which will release additional spot crude. Little premium paying in crude purchases.*

REFINERY: *Gasoline prices lower in several areas. Excess supplies being offered are in hands of small refiners. Residual fuel oils slow. Good demand for kerosene and distillates in all sections.*

TANK-WAGON AND SERVICE STATION: *No general changes in prices for regular and premium grades of gasoline. Scattered price cutting in third grade material.*

FINANCIAL: *Common oil stocks did not decline as much as industrial stocks in week ending October 23 and recovery more rapid. Average of 30 representative stocks for week ending October 23: High, 31.65; low, 24.45; close, 28.80. Week ending October 16: High, 32.33; low, 29.19; close, 29.82.*

**Detailed information in market section.*

Federal Court Asked Whether "Refined Oil" Is Gasoline

SHREVEPORT, La.—Whether "refined oil" is gasoline was raised in demurrers attacking indictments in the federal court here. Arguments were heard by Judge John McDuffie and taken under advisement.

The government charges the defendants mislabeled gasoline as "refined oil," sent into interstate commerce to evade payment of the Mississippi gasoline tax; that they obtained a lower freight rate by fraud and shipped an explosive substance (gasoline) without giving proper notice to the carrier.

The contention of the defendants' demurrers were:

First, that no interstate shipments of gasoline into Mississippi labeled as "refined oil" could be mislabeled, for under Mississippi statutes gasoline is "refined oil."

Second, that the charge in the indictments that the alleged mislabeling was to evade payment of a Mississippi gasoline tax is invalid for the reason that Mississippi has no direct tax on gasoline but has a service tax based on gasoline gallonage sold, the tax being on the privilege and not on the gasoline sold.

Third, that the charge that the defendants caused gasoline, an explosive, to be shipped in interstate commerce without notifying the railroad that it was an explosive, is invalid because of the Mississippi statute defining "refined oil" as gasoline.

Oklahoma Recommendation Is 25,000 Bbls. Less for November

W. J. Armstrong, conservation officer for Oklahoma, recommends a daily production allowable of 575,000 bbls. a day in that state during November, or 25,000 bbls. per day under the October allowable. The Corporation Commission will consider Mr. Armstrong's recommendation on October 28.

Test of Iowa Gasoline Tax Fails in Supreme Court

WASHINGTON, D. C.—An attack by Phillips Petroleum Co. on validity of an Iowa gasoline tax law as construed by the state Supreme Court was rejected Monday in the U. S. Supreme Court, which ruled there was no "substantial federal question" involved in dismissing an appeal from a judgment of the Iowa court, which held the tax must be paid on the invoiced gallonage imported into the state by the company.

The law, enacted in 1931, imposes a 1-cent tax per gallon on imported fuel. It provides for 3 per cent shrinkage or evaporation, which may be deducted from the amount of gasoline invoiced, before payment of the levy.

The company contended the law, as construed by the Iowa court, required the payment of taxes on gasoline which, through evaporation, "never even arrived within the state of Iowa."

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Speaking of Size

The industry, centering its gaze upon the large increase in production of its raw material, its near record in drilling wells and the marvelous technological progress in the finding and recovery of crude oil, may overlook the fact that this oil must be converted into finished products before it enters consumption and that these achievements have been paralleled in the manufacturing division.

The petroleum refiners of the United States have so far this year refined into finished products over 300,000 barrels of crude daily more than in any previous period in the history of the industry.

Something of what is going on in the refining division is indicated by the recent transportation of two mammoth fractionating towers to be used for the separation of finished products in cracking operations.

One of these was 93 feet long and weighed 150 tons, requiring a special train of three flat cars, moving only in daylight, which took more than a month to travel from Milwaukee to California.

Another cracking chamber could not be transported at all by rail and had to be towed by water from the East Coast to a point on Lake Michigan. No railroad had sufficient clearance between tracks to permit its passage. This chamber, weighing 230 tons, approximately as heavy as the Statue of Liberty, was 15 feet in diameter or the same size as the subway tubes under the Hudson River. It was fabricated with steel plates 50 feet long, 10 feet wide and 2 5/16 inches in thickness, the largest ever made.

These towers are but one part in plants handling many thousands of barrels of crude daily, manufacturing in one continuous, automatically controlled operation a line of completely finished products of superior quality. One unit occupies less than a city block and does far more than a major refinery of 10 or 20 years ago with its equipment spread over 20 acres.

A 36,000-barrel daily installation of this type is capable of supplying the entire gasoline requirements of the state of Oklahoma, or the aggregate requirements of Arizona, Delaware, Nevada, Vermont, Wyoming and New Hampshire.

Taking advantage of large scale operation, the industry has been able to improve all phases of manufacturing and to reduce costs per barrel despite steady improvements in quality. This explains why the price of gasoline remains low in contrast to the ascending prices of other commodities.

But size is not all, the refining industry has been constantly expanding the products available from a barrel of crude oil. Its researches have developed special products, first on a laboratory base, then semicommercial and ultimately as commercial products.

It has created new chemical industries for the manufacture of ethylene glycol, familiar as an antifreeze; toluol, a base for explosives; artificial rubber; resins used in the fabrication of a variety of articles; alcohols; aromatics; and ketones and aldehydes employed in the manufacture of drugs.

The petroleum refiner today is not only contributing new material for other industries but is taxing the facilities of fabricators in the manufacture of special equipment designed by refiners and the process organizations which serve the industry. The metallurgist especially is called upon for metals that will withstand the increasing demands of refinery operation.

And while the refiner has thus been striving to improve and expand his products he has kept the price of gasoline so low that the Interstate Commerce Commission finds it an excuse for piling a freight rate increase on top of a tax almost equal to what the refiner obtains for his product.

Aerial Photographer Is Rend
Valuable Service to Oil I

By R. A. BOWEN

Petroleum engineers, geologists, and executives have often failed to appreciate the value and importance of aircraft in their work as a means of saving both time and money. Although aircraft were first used by the oil industry nearly 15 years ago, it has not been until the past few years that they have been used extensively. Now the airplane must be considered as a new tool rapidly increasing its importance.

Aerial Photography

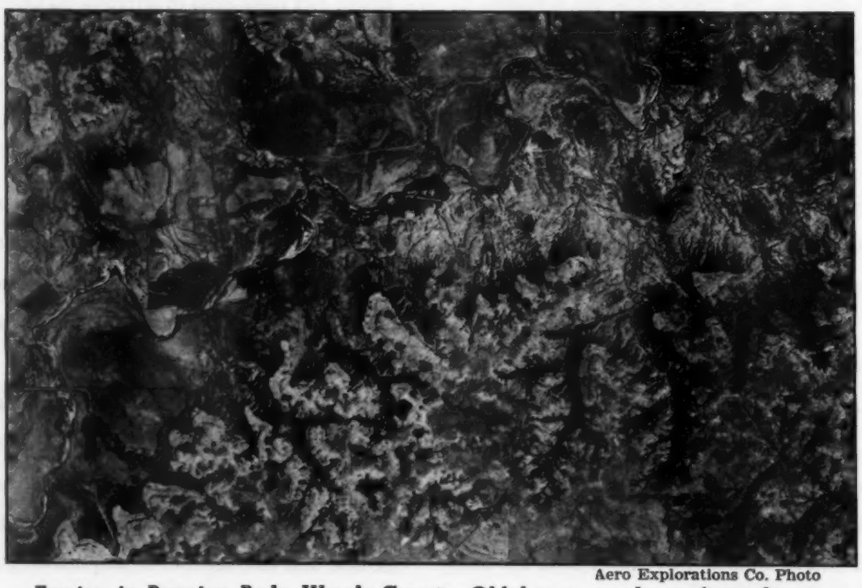
There are two general types of aerial photographs, *obliques* and *verticals*. Obliques are taken at an angle between the horizontal and vertical, producing a perspective view. The vertical views are taken with the optical axis of the camera vertical. In the making of aerial maps, verticals only are used.

Oblique photographs are obtained by holding the camera over the side of the airplane and taking the picture. The plane is banked toward the object to be photographed and the axis of the camera is held about 30 degrees below the horizon. An oblique photograph, because of its perspective, is easier to read than a vertical and is more useful in showing up features of relief and color. Obliques may be used in securing information of forest cover, geologic formations, outcrops, soils, topography, erosion, waterways and boundaries.

Recently developed color sensitized film readily shows differences in the types of vegetation. This information is of importance to the geologist because the overlying soils of some formations support certain characteristic vegetation. Limestone soils, sandy soils, and soils from shale and slate are each favored by certain plants or trees. For example, marsh and Spanish oak are typical of the Travis Peak sand formation while cedar, sumac and oak are characteristic of Glen Rose limestone. Thin limestone beds in sandstone areas can sometimes be followed across fields for miles by the nature of the vegetation. In general, it may be said that limestones have grassy slopes on top the beds while the steep faces are barren; shales have slopes that have little or no vegetation upon them; pure shale is too compact for rank growth; and sandstones usually support scrub oaks.

In certain cases the general direction of dip on slopes can be determined from the air at a distance of many miles by the vegetation which appears as green bands along the slope. Very often beds truncated by the surface allow easy root penetration in directions parallel to the bedding and the bands of vegetation in this case will show the strike. Most of these differences in amount and type of cover show up readily in oblique photographs.

By using obliques it is often possible to study the geology of the ocean bottom near the shore. At shallow depths kelp and other sea plants can be seen and photographed from the air. This plant life has been found to have a definite relation to the geology of the bottom in that certain formations will support the growth of vegetation and others will not. In some cases a definite line of growth indicates the bedding and structure. Formations and the contacts between them can also be distinguished where there are inherent color differences. A thorough knowledge of the geology of the adjoining shore is necessary in order to correctly interpret this information appearing on the photographs.



Aero Explorations Co. Photo

Erosion in Permian Beds, Woods County, Oklahoma, as shown from the air

Where preliminary surveys for pipe lines are in progress, oblique or vertical photographs from the air of property along the proposed route can be used with the following advantages:

1. A survey can be made without the land owner's knowledge. Advance information of the proposed route with attendant "jacking-up" of land prices is thus avoided.
2. Definite knowledge of every detail of the topography is obtained. Obstacles are shown in detail.
3. Stream crossings can be more easily selected.
4. Transportation and stringing costs can be reduced by picking out highways, trails, and roads from the air.
5. With this complete information the pipe line contractor can estimate costs more closely and submit a more intelligent bid.

Vertical views are taken with a camera that is mounted inside the fuselage, the lens directed through an opening in the bottom of the airplane. By combining a number of vertical photographs to form a composite picture of an area, an aerial map is produced. The principal use of verticals is in making these aerial maps, of which there are three types: the mosaic map, the photographic map and the line map.

The mosaic map is made up of strips of overlapping vertical photographs matched and mounted together to form a composite picture of the entire area.

The photographic map, which is really nothing more than a very accurate mosaic map, is also made up of strips of overlapping verticals. The photographs, in this case, are first corrected for uniformity of scale and then laid out along base lines running between carefully constructed control points.

Line maps, or hand-drawn maps, are constructed by tracing the features desired from the vertical photographs onto tracing paper or linen. In this manner, important geologic or geographic data can be differentiated from the detail of the ordinary map or photograph. The line map is sometimes used to check the information given on other nonaerial maps.

Aerial maps are valuable to the engineer and geologist because of their accurate representation of every detail of the ground exactly as the human eye sees it. Headquarters aerial maps for oil reconnaissance have been made of more than 30,000 square miles in Texas in an area which included many of the major producing fields such as the Balcones and Luling-Mexia Fault Line regions, the Yates and Winkler pools and the entire East Texas Basin. Most of the new fields in the Mid-Continent have been mapped from the air and the Humble Oil & Refining Co. has used aerial surveys for years in the Gulf Coast region.

The usual procedure in making photographic and mosaic maps is to photograph the sector to be mapped in a series of parallel strips. The airplane, carrying with it the photographer, is flown over the parallel courses at an even keel and a definite altitude, and photographs are taken at equal intervals so that there is an overlap of 60 per cent between pictures and of 50 per cent between strips. The "running overlap" between pictures is main-

dering Industry

Vertical view of Baldwin Hills, Los Angeles, taken from 7,000 feet

tained in order to secure reliable secondary control data and in order to determine the amount of tilt error. The overlap of 50 per cent between strips is customarily allowed to insure coverage of the entire area.

When the roll of film has been developed and dried, each negative is numbered in the order in which it was exposed. Prints of these negatives are made and roughly matched to make certain the entire area has been included. Another set of prints, corrected for distortion or scale if necessary, is then carefully mounted onto a map form.

An area of many square miles can be photographed in a few hours. The area covered by each photograph depends on the size of the plate, the focal length of the camera, and the altitude from which the picture is taken. For example, using a 7 by 9 inch plate, a 10 inch lens and flying at 10,000 feet altitude, a single photograph will cover an area 7,000 by 9,000 feet or over two square miles.

Multilens cameras have been developed which take three, four, and five adjacent photographs simultaneously. In this manner a much greater area is photographed with one exposure and the cost of mapping is correspondingly reduced. Only the center photograph, however, will be a true vertical and the oblique-view negatives must be corrected for distortion with a rectifying camera. For this reason, only single lens cameras are used for making large scale maps of high precision.

An adaptation of the verticals taken during the ordinary course of mapping is the stereo photograph. Any two overlapping aerial photographs taken from the same altitude with the same camera constitute a stereopair and when these are examined under a mirror stereoscope they give a third-dimensional effect. Topographic features, when so viewed, stand out with a surprising amount of relief. The geologist can trace fault lines, contours, outcrops and other features that have relief. The stereocomparator, the stereoplanigraph, and the aerocartograph are instruments which have been recently developed to contour the ground from information obtained from stereo photographs. Because of its simple construction, the stereoscope has been in more common use in this country for contouring, but it is not as accurate in this work as the other instruments, contours with an interval of less than 50 feet being difficult to draw.

Oblique view showing the structure of Kettleman Hills, Calif.

In mapping and surveying, it is well to remember that aerial photography does not altogether do away with ground surveys. The ground surveyor must provide the accurate survey of control points around which the aerial map is made. But the photographs will supply all the detail and thus relieve the surveyor of much of his task. They also aid him in planning out his route in advance.

The cost of aerial maps and surveys depends upon many factors. A few of these are: the type of work and accuracy required, the scale of the map, the accessibiilty, altitude and weather conditions of the area to be mapped, and its distance from the headquarters of the mapping concern.

With the increased use of aerial maps and the rapid progress in technique, costs will undoubtedly be lowered in the near future.

The use of air transportation is most important in remote areas where ground transportation is primitive and slow. In Canada, Alaska, Mexico, South America, Africa and Australia heavy freight has been economically transported by air.

Petroleum companies have used aircraft in this country for the transportation of emergency repair equipment and drill cores, for advertising, and for transportation of salesmen, executives and field personnel.

The cost of operating light planes for transporting personnel is not high. Many of the newer planes are very economical and can be flown at operating costs as low as 4 or 5 cents per plane mile. Assuming 300 to 400 hours of flying for a plane in a year, a total cost, including pilot's wages, insurance, depreciation, interest, and all operating expenses, would be around 12 cents a mile.

The airplane used for transport purposes should have: a crusing speed of 150 to 160 miles per hour, gasoline capacity for 500 to 600 mile trips, sufficient power to get out of small fields, and a supercharged motor capable of operating at altitudes of 5,000 to 12,000 feet. Airplanes with these characteristics, with accommodations for a pilot and four passengers, can be bought in the neighborhood of $10,000. Each year, costs of owning and maintaining aircraft are being lowered.

As these costs lower, and as oilmen become more familiar with the advantages of this new service, the airplane will undoubtedly come into even greater use by the geologist, the engineer and the executive.

Arkansas Board of Conservation in special session at El Dorado, called by O. C. Bailey of El Dorado, chairman, to consider proration on the Arkansas side of the Rodessa field. Members of the board are O. C. Bailey, chairman; Ed Hollyfield, Walter L. Brown and Robert Short, all of El Dorado; and J. D. Reynolds of Camden. C. E. Harris, El Dorado, is chief conservation agent

SHREVEPORT, La., Oct. 26.—The Arkansas Board of Conservation surprised everyone by announcing that effective November 1 the Miller County, Arkansas, portion of Rodessa would be prorated. This is the first application of oil proration ever placed in actual force by Arkansas state authorities. The Arkansas Board of Conservation was created by legislative act in 1932.

In the ruling, Arkansas joined the other group of states which are recognizing (expressly or by implication) property rights to oil in place. It puts the per well distribution of the oil field's top allowable upon a 50 per cent acreage and 50 per cent bottom-hole pressure basis. There are those who doubt the board has this authority from the terms of the 1932 act, but that remains to be tested.

Top allowable for Miller County, Rodessa, Arkansas, has been set at 10,000 bbls. per day for November, with a gas limit factor of 2,000 feet to 1 bbl. of oil. A further provision stated no one well can receive an allowable greater than 400 bbls. per day.

This order from Arkansas places the three-state field under practically the same type of proration, except the per well allowables in Arkansas will be about four to five times greater than in Louisiana and Texas.

The Arkansas Board of Conservation has called another special meeting in El Dorado on November 5 to consider rules and regulations for the Schuler field.

The 26 producing wells in Rodessa, Arkansas, accounted for an average of 13,602 bbls. per day last week, or an average of 544 bbls. per well per day. This is to be compared with an average of 107 bbls. per day for wells on the Louisiana side, and 79 bbls. per day for wells on the Texas side.

Conference on Turner Valley Market Being Planned

OTTAWA, Ontario. — Sponsored by the dominion government, a conference will be held to study methods of assisting Turner Valley crude producers to secure a larger proportion of the market for oil and gasoline in western Canada. The conference arises out of the request of Turner Valley operators to the dominion government for assistance in solving their marketing problems. Representatives will be present from the major refining companies, oil operators, and transcontinental railways, as well as of the governments interested.

Extending the markets for Turner Valley crude in the Canadian West involves the displacement of Montana crude; and while it is conceded lower freight rates will assist the Alberta operators, it is felt results can best be secured through cooperation between the large refining companies and the independent operators.

Proposals that the government assist in construction of a pipe line from Turner Valley to Regina or the Pacific Coast are not likely to be adopted; the government feeling the railways can handle the traffic and need the revenue derived from it. There is little prospect either of a tariff against American crude as eastern refineries are dependent on imported crudes and regional tariffs to conserve the western markets for Alberta crude are regarded as impracticable.

The conference will, it is understood, be conducted by the federal tariff board, of which G. H. Sedgwick is chairman.

Shale and Cannel Coal Conference Planned for June in Scotland

An international conference is being planned to discuss the utilization of shale and cannel coal for the synthetic production of oil and gas, to be held in Scotland early in June, 1938. Oil, gas and mining technologists from many countries are being invited to contribute papers. The well-known geologist, Sir Thomas Holland, past president of the British Institution of Petroleum Technologists and vice chancellor of the University of Edinburgh, will be president of the conference.

Reports Gas Strike in Test Near Cook Inlet, Alaska

R. E. Havenstrite, president of Iniskin Drilling Co. of Alaska and of California-Western Oil Co., wired his Los Angeles office reporting that the Iniskin wildcat, drilling near Cook Inlet on the Alaskan Peninsula, had encountered gas under high pressure at a depth slightly below 5,000 feet. Drilling mud became highly gas cut, and the supply of weighting material, which had been considered sufficient for emergency purposes, was soon exhausted while drilling in fractured shale. Since further progress could not be made without additional mud and weighting material, it became necessary to shut down. Mr. Havenstrite had expected to continue drilling until November 1 before being forced to shut down by the Alaskan winter, but knowing it would be impossible to obtain the required material at the remote location this fall, he has abandoned the test until spring. The drill pipe has been racked, and the well, provided with the latest types of high-pressure control heads, has been shut in. Total depth is 5,070 feet, and Mr. Havenstrite believes that definite signs of oil have been witnessed. The test is situated on an anticline 12 miles long.

American Welding Society Holds Its Eighteenth Annual Meeting

ATLANTIC CITY, N. J.—The American Welding Society's eighteenth annual meeting and welding exposition here was marked by greater attendance and more comprehensive exhibits than ever. The meeting was opened by President A. E. Gibson who reported very gratifying progress in attainment of the society's objectives and predicted still greater progress during 1938. He reported an increase in local sections from 12 to 23 and a gain of nearly 100 per cent in membership, indicating the widespread industrial acceptance of welding.

In technical work, many new codes have been written or revised and the society, through its members, has played an important role in the fundamental research sponsored by its Engineering Foundation under the direction of Dr. Comfort Adams of Harvard University. Some of these increased activities and facilities have been made possible by industrial concerns which have underwritten the society's program.

Aviation Gasoline Shipment From Coast to China

LOS ANGELES, Calif.—Believed to be the first shipload of aviation gasoline to be sent to China from California for army aviation use since the outbreak of the North China hostilities, the British motorship Raby Castle loaded approximately 7,500 drums at the Wilmington case-oil terminal. It continued to San Francisco where it will complete a cargo of approximately 30,000 drums for Hongkong.

Texas Senate Protests Federal Control of Coastal Waters

AUSTIN, Tex.—The Texas senate passed a resolution opposing congressional action to restore control of Texas coastal waters to the federal government. The state has been leasing coastal waters for oil development as part of the public school lands.

OBITUARIES

W. R. SWEATT, chairman of the board of Minneapolis-Honeywell Regulator Co., died October 12.

JOHN C. WOLKE died in Upper Montclair, N. J., October 19. He started as an office boy with Standard Oil Co. of New Jersey in 1906. After 25 years of association with the Jersey company he joined L. Sonneborn Sons, Inc., oil refiners, in February, 1932, as executive sales manager.

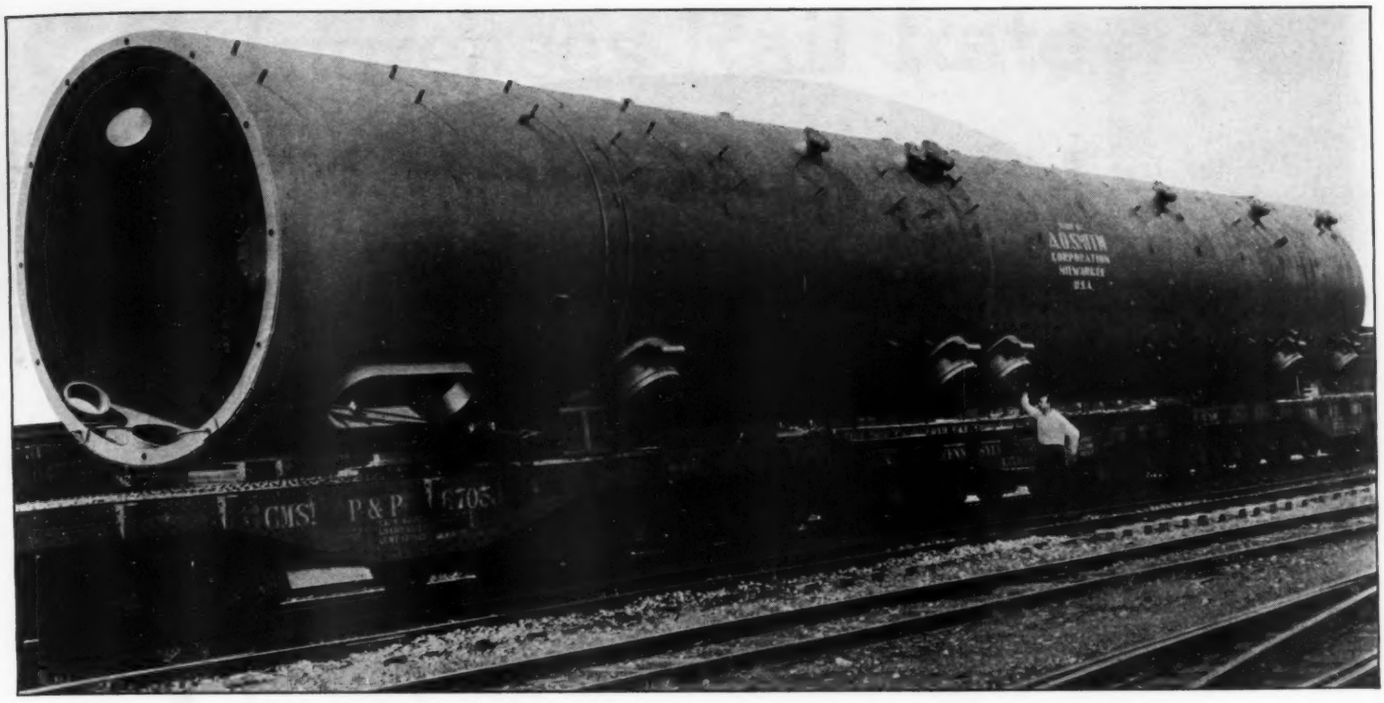
THOMAS H. VICKERS, of Fort Worth, Tex., former Oklahoma and Texas oil man, retired because of ill health, died on Friday, October 22, in Wichita Falls, Tex., where he had been receiving treatment.

E. M. BUTLER, 51, president of Butler Oil & Refining Co. and Oklahoma Oil Co., was killed instantly in an automobile accident near Denver on October 18. He was on his way to Derby, Colo., where his company is drilling a wildcat. His home was at Oklahoma City.

GEORGE W. WEAVER, 62, veteran oil well driller, a native of Emlenton, Pa., who worked in fields in Ohio, West Virginia and Kansas, and participated in the Ranger, Tex., boom, died in Cisco, Tex., October 19.

PAUL HEGWER, deputy supervisor of U.S.G.S. at Casper, Wyo., died October 24 in the Memorial Hospital there of pneumonia contracted on a hunting trip. He was connected with U.S.G.S. since February 25, 1927, when he entered the Muskogee, Okla., office. He lived in Tulsa for a time from 1927 to 1930 when he was transferred to Casper.

JOHN L. MURRELL, 32, auditor for Dunnigan Tool & Supply Co., Breckenridge, Tex., died in Graham, Tex., October 17, as a result of an automobile accident.



Largest piece of freight ever shipped west: 93-foot, 151-ton tower loaded on three flatcars

Mammoth Tower Shows Trend in Modern Refinery Design

By L. P. STOCKMAN

The trend toward larger capacities in refining facilities is exemplified in the construction program of the Union Oil Co. at its Oleum, Calif., refinery part of which has been completed and part under way at this time. The $500,000 crude distillation unit has been in operation for several weeks and a $2,000,000 cracking plant is now being built. It will be in operation about March 1 next year.

Record Shipment

In connection with the installation of the cracking plant an evaporator tower, constituting the largest single freight item ever shipped west, has arrived safely at the Oleum refinery site. This steel vessel is 93 feet long, 12 feet 10 inches in diameter, weighs 151 tons and is valued at $75,000. It consists of two steel units—a lining of high chrome steel welded on to an outer shell of regular steel—and is so designed to withstand the high cracking heat and pressures. It was insured by three companies during its journey, as no single company wanted to assume the full risk for the many hazards involved in its transportation to the Pacific Coast from Milwaukee, where it was fabricated.

The tower before leaving the A. O. Smith Corp.'s fabricating plant was filled with air under compression to protect its interior construction. The vessel left Milwaukee on a cold rainy day with its internal air pressure at 35 pounds per square inch and arrived in California on a warm sunny day with 42 pounds pressure. On arrival it took 18 hours to test all the outlets on the vessel with soap and water.

This evaporator tower is so large that it required three special railroad flatcars to carry it on its rail journey, including the only two flatcars made that are capable of carrying 200 tons each. Two of the flatcars were of unusual length but the center car was a stub. The two large flatcars rolled on 16 wheels.

No barge big enough could be found to take it from Milwaukee through the Great Lakes and the Erie Canal to an ocean steamship at New York. Shipping it by rail to New Orleans and thence by steamer was ruled out due to fear of hurricanes. Finally, it was routed on two rail lines to Los Angeles for transshipment to Oleum. It took a month and a day for the vessel, traveling only by daylight, to reach Los Angeles.

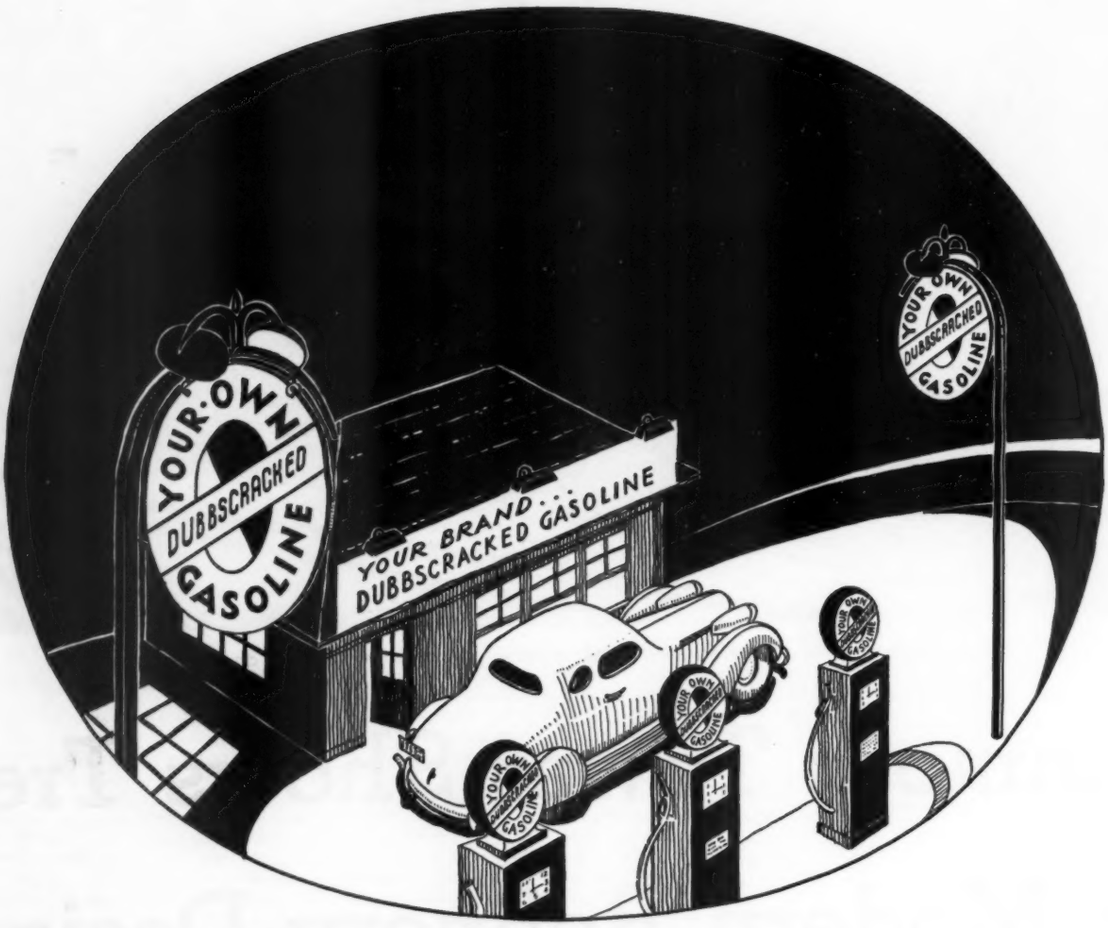
Officials planned to transport the 151-ton tower to Oleum on the world's largest highway trailer, a 34-wheel job drawn by a 200-hp. diesel tractor, but the state highway department refused to allow this much weight to traverse highway bridges. So it was decided to move the vessel to Los Angeles Harbor and move it to Oleum by boat.

At Los Angeles Harbor, more difficulties arose. No crane could lift the huge mass of steel and the weight was held too great for the piers there. So the vessel was transferred to Long Beach and gently rolled off its flatcars over a skidway of heavy timbers on the only barge capable of handling it. This barge had to have its deckhouse removed to accommodate the evaporator and when the load hit the deck the barge settled 30 inches in the water, twice as much as anticipated. It was the largest single towing job in the history of the port.

New Crude Unit

The Union company's new crude unit now operating was designed to handle 15,000 bbls. per day of either high-gravity Kettleman Hills crude or low-gravity Orcutt or Santa Maria Valley crude. It will replace existing less efficient stills now running about 10,000 bbls. per day. The new distillation unit will combine an atmospheric fractionating column 9½ feet in diameter and a vacuum fractionating column 11⅛ feet in diameter. The unit is entirely self-contained, with all production streams being cooled to satisfactory storage temperatures within the equipment and pumped to storage via recording flow meters.

The plant at Oleum is one of four refineries operated by the Union Oil Co. in California. It has a rated capacity of 17,000 bbls. daily and manufactures lubricants and asphalts in addition to the usual light-end products. It previously had no cracking facilities.



To gain gallonage

Distribute Dubbscracked

Display Dubbscracked designations

Declare Dubbscracking destroys detonation difficulties

Dubbscracked delivers distance

More miles make motorists merry

Dubbscracking is the way to make gasoline

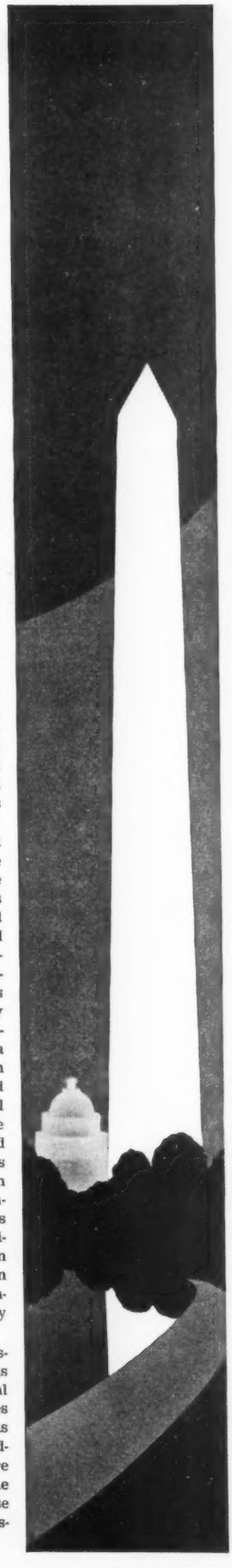
Dubbscracked gasoline is the gasoline to sell

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

I.C.C. Increases Rail Rate on Petroleum Products

By HENRY D. RALPH



WASHINGTON, D. C., Oct. 25.—A general increase in railroad freight rates on petroleum and petroleum products has been approved by the Interstate Commerce Commission, as a part of an increase in the rates on a number of basic commodities asked by the railroads. The increases will generally be 1 cent per 100 pounds in all existing freight rates except in the southern states and certain rates in the northeastern states where petroleum freight rates are already lower than the maximum rates permitted by the commission in previous orders.

On petroleum and its products the railroads asked for a blanket increase of 1 cent per 100 pounds except where the rates were made to meet water or truck competition, and except that special treatment was asked for gasoline and lubricating oil rates in so-called official territory, including the states east of the Mississippi and north of the Ohio and Potomac rivers. The commission refused to permit the proposed increases in so-called southern territory, south of the Ohio and east of the Mississippi River, and approved increases for the rest of the United States except so far as the proposed changes would have increased rates by more than 1 cent per 100 pounds. The increases apply to all commodities classified as petroleum or petroleum products, including lubricating oils and greases, asphalt, pitch and tar. The commission also approved a similar increase in the transcontinental freight rates on liquefied petroleum gas.

In justification of their proposal for a general increase of 1 cent in petroleum rates, the railroads claimed these commodities are able to stand what they term a moderate increase. At the hearings they showed that state and federal taxes on gasoline range from 3 to 8 cents per gallon in various states and average 5.36 cents, whereas the proposed increase is equivalent to but one-fifteenth of a cent per gallon and $5.57 per car of 8,445 gallons, the average loading the first six months of 1936. They also showed the price of U. S. Motor gasoline in tankcar lots, f.o.b. Group 3, Oklahoma, ranged from 4.5 to 5.2 cents a gallon in 1936, that the average tank-wagon price of this grade of gasoline in 1936 at 50 representative cities was 12.63 cents per gallon exclusive of gasoline taxes, and that the average freight revenue on gasoline throughout the United States during the first six months of 1936 was equivalent to 1.54 cents per gallon. Deducting from the average tank-wagon price, 12.63 cents, the highest Group 3 price during the year, 5.25 cents, and freight of 1.54 cents, leaves a balance of 5.84 cents a gallon, which the railroads contended showed gasoline can well stand an increase of 1 cent per 100 pounds which would be equivalent to but .07 cent per gallon. Shipping interests appearing at the hearing opposed the increases on the ground present rates are too high as demonstrated by heavy shipments of petroleum products by water, pipe line and truck in recent years.

In its decision, the Interstate Commerce Commission took note of the competitive conditions in petroleum transportation, but concluded:

"One very significant fact developed by the evidence in regard to petroleum and its products is the extent too which the railroads have found it necessary, for competitive reasons, to establish rates below the maximum reasonable level which we have prescribed. This indicates the danger attendant upon increases in the existing rates which have not been reduced specifically to meet water or truck competition. However, the record does not permit a definite conclusion that applicants will not gain additional revenue from the increases, and hence we cannot disprove them on that account.

"Our conclusions as to the general justification for applicants' proposals apply to the proposals on these commodities, in so far as a flat increase of 1 cent per 100 pounds is sought in present rates, with the exception that no increase is justified within southern territory beyond the reasonable maximum level which we have heretofore prescribed. That level is amply high and the railroads have found it necessary in many instances to go well below it."

As to southern territory, the commission's findings mean railroads may increase petroleum rates in the southeastern states if they wish to do so up to maximum rates approved by the commission in earlier cases. In many instances, however, competition has forced these rates below the already prescribed maximum rates.

In official territory, that is the northeastern states, the commission refused to approve changes proposed by the railroads in the rates on gasoline which are so-called column rates, that is fixed percentages of the current first-class rates. The railroads proposed to increase the column 29 rate in central territory (between Chicago and Buffalo-Pittsburgh) and reduce the column 32.5 rate in the balance of official territory to column 30 on gasoline, kerosene and petroleum fuel oil distillates in tankcars, and to increase the rate to column 35 when not in tankcars. They also proposed to increase the rates on lubricating oils and greases from column 32.5 to column 35, and to increase the rates on crude, gas and fuel oils 1 cent when in tankcars and from column 26 to column 35 when not in tankcars. Similar changes were proposed for shipments from official territory to western trunk line territory.

In discussing this proposal, the commission declared that it "would disturb the long existing practice of according the same rates on shipments in packages and in tankcars and the equally long established practice of applying the same rates on gasoline and other refined products, except where special circumstances, such as water or truck competition, warranted different treatment. For many years we have uniformly prescribed the same rates on gasoline as on other refined products, and no differentiation has been made between shipments in tankcars and in packages. This proposal would seriously disturb existing relations. For example, the rate on lubricating oil from Oil City, a representative western Pennsylvania refining point, to Chicago, 464 miles, would be increased from 35 to 38 cents, while the rate from Tulsa, 673 miles, would be increased from 36 to 37 cents. The rate within official territory would be increased from 1 to 4 cents, while the rate from the Southwest to official territory would be increased but 1 cent. To representative western trunk line destinations the rate from official territory origins would be increased from 2 to 5 cents, while the rate from the Southwest would be increased but 1 cent. . . . We cannot find that the changes in rates have been justified, except to the extent that they are permissible under our outstanding orders. We find no sufficient reason for establishing different rates for movements when not in tankcars than when in tankcars, and the proposed special increases in rates on lubricating oils and greases would unduly and unjustly disturb existing relationships."

Commissioner Aitchison dissented to most of the commission's findings, declaring most of the rates increased by this order were originally arrived at through careful individual studies by the commission, participated in by representatives of individual shippers and localities affected; because it was shown that existing rates on petroleum and many other products are already on a relatively high plane; and because there was impressive testimony to indicate that in the long run the railroads may suffer from the increased freight rates because of permanent diversion of tonnage to other forms of transportation.

Refinery Expansion

Rodessa Refinery Operating After Being Enlarged

SHREVEPORT, La.—East Texas Refining Co. has begun operation of its recently acquired and remodeled refinery in the northern edge of the Rodessa townsite. Formerly this plant was operated as the Sandra refinery by Griswold Refining Co. of Shreveport. It was taken over by F. W. Burford after his extensive acreage in the Arkansas portion of the Rodessa field was proven for production. The refinery site is about 3 miles from the Arkansas Rodessa field. Its daily rated capacity is 4,000 bbls.; daily runs to stills now averaging about 3,000 bbls.

New Talco Cracking Plant Placed in Operation

SHREVEPORT, La.—The new Dubbs cracking unit of the Talco Asphalt & Refining Co. plant at Mount Pleasant, Tex., began operation this week. Approximately 2,500 bbls. of 68-70 octane gasoline will be manufactured by this unit daily. This refinery began initial operations on a limited scale June 24, 1937, by firing one crude still for the manufacture of asphalt products, gasoline, distillate and gas oil.

Ark-La-Tex Refiners Witness Treating Demonstration

SHREVEPORT, La.—The third and final meeting of the 1937 series of regional conferences directed by the manufacturing committee of the Western Petroleum Refiners Association was held in Shreveport, October 22. A feature of the meeting was the demonstration, by means of portable equipment shown in the accompanying photograph, of the copper chloride treating process. The plant was attached to a gasoline line in Arkansas Fuel Oil Co.'s Shreveport plant, and a demonstration of the process of sweetening sour gasoline was made. W. A. Schulze and A. E. Buhl, of Phillips Petroleum Co., were in charge of the demonstration.

A new method of treating gasoline for color stability, sweetness, reduction in sulfur content and increase in lead susceptibility was presented at the meeting, the first time the method has been presented before any technical group. The method is known as the Howard process and was discussed by Emby Kaye, vice president of Skelly Oil Co. The paper is published on page 50 in this issue of The Oil and Gas Journal.

The third subject on the Shreveport program concerned the selection of the most efficient alloy steels for use in petroleum refineries. The subject, of increasing importance due to tube failures from corrosion and creeping under high temperature use, was presented by Martin Fleischmann, metallurgical engineer, Timken Roller Bearing Co., Canton, Ohio. Mr. Fleischmann's paper appeared in the October 21 issue of The Oil and Gas Journal, page 48.

Use of High Antiknock Motor Fuels Increased in 1937

NEW YORK.—Rising use of high antiknock fuel is exercising a marked influence on the marketing programs of jobbers of petroleum products. Distributors in increasing numbers are turning to premium gasoline, the outlets for which are undergoing notable expansion.

Jobbers licensed to sell Ethyl gasoline during the first eight months of 1937 were 11.5 per cent more numerous than in the corresponding period of 1936. Ethyl license agreements were issued to 758 jobbers, who constituted 52 per cent of the total number obtaining licenses from the Ethyl Gasoline Corp. during these months. The 1937 gain is attributed to the popularity of the plan by which jobbers receive an additional profit on the sale of Ethyl gasoline over that derived from the sale of other grades.

Michigan Refinery Leased To Detroit Company

SAGINAW, Mich.—Lease of the 3,200-bbl. refinery of the Hanners Oil Co. to the Aurora Gasoline Co., of Detroit, has been announced by C. E. Larson, president of the Hanners company. The lease was for a six-year period. The plant, located in Elsie, Mich., is now in operation.

Small Refinery Planned For Red Deer, Canada

RED DEER, Alberta, Oct. 23.—Local men in association with P. L. Hyde of Calgary are planning erection here of a 200-bbl. refinery to cost $32,000. The plant will be in operation by next March and its output will be marketed largely in the Red Deer district.

Pipe Line Work

Wabash Pipe Line Company Is Operating Illinois Line

SHREVEPORT, La.—Wabash Pipe Line Co., subsidiary of Pure Oil Pipe Line Co., has begun operation of its new 8-inch welded line from its new initial station just east of Noble, Ill., to Martinsville, Ill., there connecting with Illinois Pipe Line Co.

Only one of the two 200-horsepower gas engine units, shaft-driving reciprocating pumps, is being used now, and is handling about 15,000 bbls. of new Illinois production daily. Total capacity of the two-unit plant will be 25,000 bbls. daily. The gathering system from the Clay City and Noble fields has been completed to Pure's tank farm near Noble for several weeks.

Michigan Gas Extension to Tap Broomfield Region

SAGINAW, Mich.—Arrangements under which natural gas users in Mount Pleasant and Clare will be assured enough gas to meet their winter needs, of which Gas Corp. of Michigan despaired a few weeks ago, are before the State Public Utilities Commission for approval.

The arrangement contemplates the "borrowing" of 100,000,000,000 feet of gas between now and April 15 from Consumers Power Co., which supplies natural gas to Saginaw, Bay City, Midland and Lansing. The Consumers company balked at the plan until given utilities commission assurances its "loan" arrangement with Gas Corp. of America would not place the Consumers Pipe Line in the class of common carrier.

Construction of a 13-mile pipe line will be necessary to provide Mount Pleasant and Clare a winter emergency gas supply from the Consumers pipe line, which it will tap in the Broomfield gas region.

Allegany Refiners Line Is About Half Completed

BOLIVAR, N. Y.—Allegany Refiners, Inc., is building a pipe line from a point near the Sinclair pump station in Bolivar to Kossuth, Phillips Hill and Vosburg, to relieve congestion in those localities.

Already the new line has been laid from Bolivar to the McDivitt lease, Bolivar-Allentown road, or a distance of about 3½ miles. When completed the line will be 6 miles in length.

Rich & Co. of Bradford, Pa., is the contractor. It is expected the line will be completed and in operation the latter part of the month.

Allegan County, Mich., Pipe Line Organized By Field Operators

SAGINAW, Mich.—Commonwealth Pipe Line Co. has been organized by Allegan Crude Oil Co., Muskegon Oil Corp. and Lentz & Miller, Inc., of Muskegon, operators in the Salem field, Allegan County.

Alamo Pipe Line Co. Completes Line to the Ezzell Field

HOUSTON, Tex.—Alamo Pipe Line Co., newly formed organization headed by E. M. Jones of San Antonio, Tex., has completed a line from the Ezzell field of McMullen and Live Oak counties, to a railroad loading rack at Kittie. A large number of wells have set casing pending completion of the line.

Caddo Pipe Line Company Hurries Construction Work

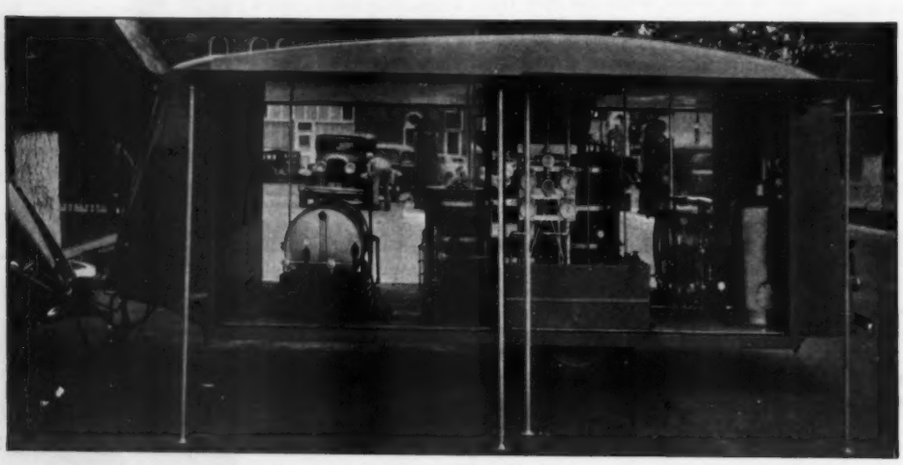
SHREVEPORT, La.—With construction of the line about completed, Caddo Pipe Line Co. (Grogan Oil Co.) rushed building of two 10,000-bbl. storage tanks and pump station for its 6-inch Lisbon crude line.

The company hopes to place the line in operation by November 1, relieving to some extent the crude outlet situation in the field which developed with Gulf Refining Co. reducing its runs to 5,000 bbls. daily.

Construction of New Michigan Line Awaiting Materials

SAGINAW, Mich.—Material for the construction of the 33-mile pipe line of the newly organized Bay Pipe Line Co., to serve the Buckeye Township oil fields of Gladwin County with its terminus at Bay City, is expected to arrive by November 1. Construction is scheduled to begin immediately on arrival of materials, officials said.

Construction of a refinery at Bay City by the Bay Refining Co. will be launched at the same time. Both companies are composed of a group of independent oil operators in the Buckeye field.



Portable plant for demonstrating the copper chloride process of treating gasoline. W. A. Schulze, research engineer of Phillips Petroleum Co., was in charge of the demonstration held in the refinery yard of Arkansas Fuel Oil Co., at Shreveport, La., October 22

Natural Gas News

Gas Companies Gain 252,000 Customers in First 8 Months

Domestic customers served by manufactured and natural gas utilities totaled 15,816,700 on August 31, an increase of 252,000 during the first eight months, it was announced by Paul Ryan, chief statistician of the American Gas Association.

More than 1,000,000 gas ranges were sold in the country during the first eight months, an increase of 13 per cent.

Revenues of manufactured and natural gas utilities aggregated $541,061,400 for the eight months, an increase of 4.6 per cent over the corresponding period of 1936. Revenues from industrial and commercial users increased 11.5 per cent, while revenues from domestic customers gained 1.4 per cent.

Revenues of the natural gas industry for the eight months amounted to $300,365,500, a gain of 7.8 per cent over a year ago. Revenues from industrial uses increased 17.5 per cent, while revenues from domestic uses gained 3.7 per cent.

Kingsville, Ontario, Residents Reject New Rate Proposal

KINGSVILLE, Ontario.—Ratepayers of Kingsville by a vote of 324 to 112 defeated a proposal to allow Southern Ontario Gas Co. a sliding scale of rates in place of the existing flat rate of 55 cents per 1,000 feet. Under the new agreement the company proposed to supply purified natural gas for the raw product, and continue payment to the town of $3,000 annual rental for the gas plant. It is expected application will be made by the company to the Ontario natural gas referee for revision of the rate schedule.

Central Pipe Line Co. Will Build Purification Plant

AYLMER, Ontario.—Central Pipe Line Co. has purchased a vacant factory building at Springfield, in Elgin County, and will install a gas purification plant, to handle the output of its No. 1 well recently completed in the west end of the Brownsville field with initial production of 3,250,000 feet a day. A line has been laid from the well to Springfield, and the plant is expected to be in operation by the latter part of November. The gas will be delivered to Aylmer by the Springfield-Aylmer 5-inch pipe line completed this summer.

Ordinance Reduces Rates to Orange, Tex., Consumers

ORANGE, Tex.—Mayor S. M. Depwe has approved an ordinance for a reduction of 18 per cent for domestic and 10½ per cent for commercial users of natural gas furnished by the United Gas Corp. The new rate will be effective for October and will be shown in the November bills.

Oklahoma Natural Gas Co. Report for Twelve Months

Oklahoma Natural Gas Co. and subsidiaries for the 12 months ended September 30 had a net income of $1,503,150, with all charges met but provision for federal surtax. It compared with $834,377 for the preceding 12 months to September 30, 1936.

Rio Grande Valley Gas Co. Given Franchise at Edcouch

McALLEN, Tex.—Franchise for piping natural gas into the town of Edcouch in Hidalgo County has been granted to the Rio Grande Valley Gas Co. The 30-year franchise calls for a rate of $1.50 for the first 1,000 feet and 70 cents per 1,000 over that.

Muskogee Companies Lose Test on Standby Service

Cherokee Public Service Co. and Municipal Gas Co. of Muskogee, Okla., lost a state Supreme Court fight to compel the Oklahoma Natural Gas Co. to furnish them "standby" gas service.

The court sustained District Judge Enlow Vernor, who denied the writ of mandamus sought by W. D. Dickinson, trustee in bankruptcy for the Cherokee and Municipal companies.

"Standby" service the court interpreted to mean the plaintiff companies would accept gas from the defendant company only when it could not obtain gas elsewhere at a cheaper rate.

Philadelphia Councilmen Say Natural Gas Is Coming

PHILADELPHIA, Pa.—Notwithstanding opposition of the State Public Utilities Commission and coal interests, Philadelphia councilmen predicted that natural gas will flow into Philadelphia "in the course of time" to replace the present artificial supply and give city consumers lower rates.

After visiting natural gas fields in northern Pennsylvania and southern New York, the councilmen expressed themselves as satisfied with the "educational" value of the trip on which they were conducted by John T. Cunningham of Rixford.

Through the Bodine Syndicate of Philadelphia, Mr. Cunningham has entered a bid to supply gas to the city-owned gas works, now operated under lease by the United Gas Improvement Co.

Villages in Southern Ontario Seeking Reduction in Rate

ST. THOMAS, Ontario.—Application is being made to the natural gas referee for Ontario by E. S. Livermore in behalf of the villages of Dutton, West Lorne and Rodney for a reduction in the natural gas rates charged by Southern Ontario Gas Co. The present rate is 90 cents per 1,000 feet, gross. This is the first rate application by a municipality in several years.

Memphis Natural Gas Co. Income

Memphis Natural Gas Co. in report for 12 months ended September 30, 1937, subject to audit, shows net income of $685,797 after depreciation, interest, amortization, federal income taxes and surtax on undistributed profits, equal after dividends on $7 preferred stock, to 70 cents a share on 918,680 shares of common stock.

Speakers and Officials at Shreveport W. P. R. A. Regional Meeting

Speakers and officials attending the regional meeting of the Western Petroleum Refiners Association in Shreveport, La., October 22: W. A. Schulze, Phillips Petroleum Co., Bartlesville, Okla.; Emby Kaye, vice president of Skelly Oil Co., Tulsa; Leon Grosjean, secretary of the La-Ark-Tex division of the W.P.R.A., Shreveport; Ralph B. Pierce, manager of the refinery division of Arkansas Fuel Oil Co., Shreveport, host to the association at the company's plant during the afternoon session; and Martin Fleischmann, metallurgical engineer of Timken Roller Bearing Co., Canton, Ohio, and author of a paper on alloy steels.

Natural Gasoline

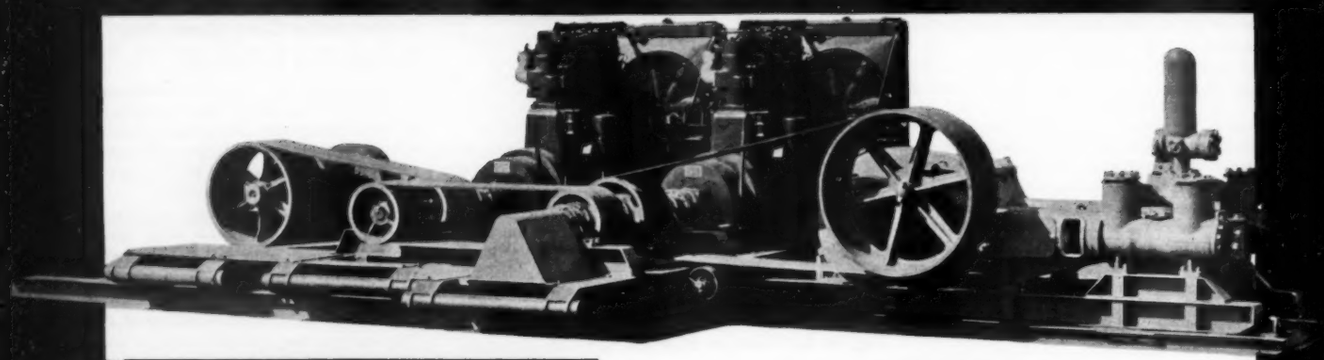
East Texas Refining Co. to Build New Plant in Arkansas

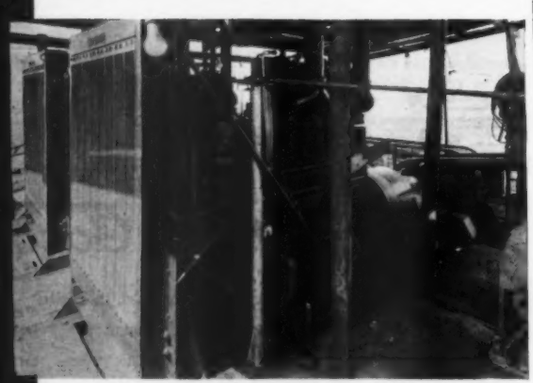
SHREVEPORT, La.—East Texas Refining Co. (F. W. Burford) has begun clearing location in section 14-20-28 on the Capps "C" lease in Miller County, Arkansas, for the erection of a new natural gasoline plant, it is reported. The plant will be of 30,000,000 feet daily capacity, of the absorption type, and will be the ninth plant located in the Rodessa field. The East Texas company and affiliated producing companies control the majority of the producing acreage on the Arkansas side of the field at this time.

Del Rey Acquires Additional Gas in Playa Del Rey Field

LOS ANGELES, Calif.—Del Rey Oil & Gas Co. has acquired the natural gas heretofore processed by Ohio Oil Co.'s natural gasoline plant in the Del Rey field as the latter company has started to move its Del Rey plant into the El Segundo field where the company has completed several excellent wells on the Gough lease. Production of natural gas taken over by Del Rey Oil & Gas Co. in the Playa Del Rey field approximates 750,000 feet daily from Ohio Oil Co.'s 24 producing wells and about 200,000 feet daily from contracts held by Frank Long. Total gasoline recovery is expected to be around 2,000 gallons daily.

IDEAL TYPE RS-244
ROTARY RIG DRIVE





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November Crude Oil Estimate Is 3,509,000 Barrels Daily

The daily average supply of domestic crude oil estimated by the Bureau of Mines to meet the demand in November, 1937, is 3,509,000 bbls., or 59,100 bbls. less than the daily average estimated for October, 1937. However, it is 475,100 bbls. (16 per cent) higher than the actual daily production for November, 1936, and 12 per cent higher than the actual demand for domestic crude for that month.

Current situation.—Crude oil production during the four weeks September 4 to October 2 averaged about 3,665,000 bbls. daily. During that period crude oil stocks declined 1,381,000 bbls. net, of which 1,061,000 bbls. was in domestic grades, indicating a daily demand for domestic crude during this period of 3,703,000 bbls. This demand, which represents a new record even though the period was one of declining gasoline consumption, was much larger than generally anticipated probably because of (1) continued heavy movements abroad; (2) relatively low gasoline yields, and (3) below average reductions in gasoline stocks.

ESTIMATED CRUDE OIL REQUIREMENTS BY STATES*

(Daily averages in barrels)

State—	Forecast Nov., 1937	Forecast Oct., 1937	Actual production Aug., 1937
Texas	1,413,300	1,430,300	1,524,700
California	674,600	660,000	673,400
Oklahoma	598,000	629,200	650,500
Louisiana	246,200	254,600	264,000
Kansas	189,700	199,900	111,200
New Mexico	104,800	106,400	201,000
Wyoming	56,300	57,300	55,500
Pennsylvania	51,800	55,500	55,000
Michigan	47,400	43,500	48,100
Arkansas	33,100	36,000	33,500
Illinois	20,900	17,300	21,700
Montana	17,100	17,600	16,600
New York	14,700	15,800	15,100
Kentucky	14,600	16,700	15,200
West Virginia	9,900	10,500	10,400
Ohio	9,800	10,400	10,100
Colorado	4,500	4,500	4,200
Indiana	2,300	2,600	2,400
Total	3,509,000	3,568,100	3,712,600

*The amounts in this table have been calculated as the requirement for the months stated and are not intended to be calculations of daily average demand for the current year or for any period other than the months stated.

Motor Fuel

Domestic demand.—Allowing for an upward adjustment in the estimate of motor fuel demand in November to reflect a growth in the seasonal importance of that month, the estimate of domestic demand is 43,800,000 bbls., or nearly 10 per cent higher than the actual for November, 1936.

Exports.—Returns to the bureau from the exporters of motor fuel indicate a continuation of the heavy movement abroad, hence the estimate of exports of motor fuel for November have been raised 3,500,000 bbls., or 250,000 bbls. higher than the October estimate.

Stocks.—Stocks of finished and unfinished gasoline amounted to 66,756,000 bbls. on August 31, 1937. According to statistics of the American Petroleum Institute, gasoline stocks were reduced about 1,700,000 bbls. in September, which would place them at about 65,000,000 bbls. as of September 30. Assuming that a reduction of 1,000,000 bbls. will be made in October, stocks should reach the year's low of approximately 64,000,000 bbls. on October 31, 1937. Although this was about 11 per cent higher than the comparable total for 1936 (57,662,000 bbls.), the day's supply was the same for both periods, namely 41 days. Although gasoline stocks generally increase slightly in November, the bureau has estimated no change in gasoline stocks for November, 1937.

Gasoline production.—Benzol and "direct" sales and losses of natural gasoline have been estimated as 800,000 bbls., making the estimated production of gasoline 46,500,000 bbls., or 1,550,000 bbls. daily. This is distributed among the various districts as follows (thousands of barrels): East Coast, 6,610; Appalachian, 1,650; Indiana-Illinois, 8,000; Oklahoma, 3,100; Kansas-Missouri, 2,600; Texas Inland, 3,710; Texas Gulf, 10,690; Louisiana Gulf, 1,410; North Louisiana-Arkansas, 920; Rocky Mountain, 1,100; California, 6,710.

Crude Petroleum

Runs to stills.—Natural gasoline consumption at refineries in November is estimated as 8.9 per cent of the total gasoline required, or 4,140,000 bbls. The yield of straightrun and cracked gasoline is estimated as 43.3 per cent, which when applied to the estimated straightrun and cracked gasoline production of 42,360,000 bbls. gives refinery crude oil requirements as 97,770,000 bbls., or 3,259,000 bbls. daily.

Foreign crude runs.—Foreign crude run to stills is estimated as 2,400,000 bbls., or 300,000 bbls. less than the previous month's estimate.

Exports, fuel, and losses. — Crude oil exports have been estimated at 6,200,000 bbls., or 200,000 bbls. less than for October. The estimate for crude oil burned as fuel and losses has been increased by 600,000 bbls. to 3,700,000 bbls.

Crude oil required. — The application of the usual methods to the total estimated market demand for domestic crude oil gives the following breakdown by states of origin:

Texas and New Mexico Set Allowables for November

The Texas Railroad Commission October 20 reduced the crude allowable for November 61,623 bbls. under the recommendation of the Bureau of Mines. The October 1 allowable set by the commission was 1,405,844 bbls.; October 19 allowable 1,468,319 bbls. and November 1,351,677 bbls. The peak allowable was in August, 1,495,734 bbls.

Chairman C. V. Terrell said crude stocks have risen to 310,000 bbls. from a low of 287,000 bbls. last winter, positive proof of overproduction. In various parts of Texas purchasers are refusing to buy oil. "The reduction is intended to make it possible for every Texas well to produce and sell some oil every day and to prevent waste."

Allowable production in New Mexico was fixed at 104,800 bbls. daily for November, the same as estimated by the Bureau of Mines, an increase of 800 bbls. daily over October and 3,500 bbls. daily were marked for export. Actual production for the four weeks ended October 16 was 109,150 bbls. daily.

Texas Special Trains to A.P.I.

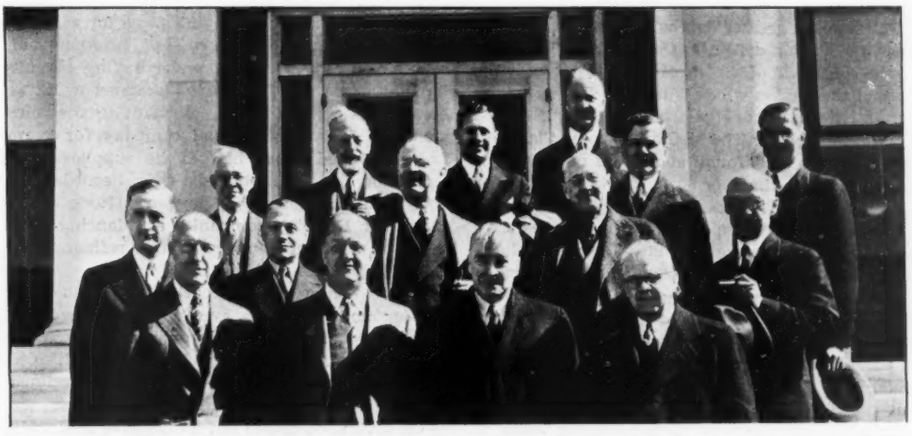
Texas oil men attending the annual meeting of the American Petroleum Institute at Chicago, November 8-12, will have opportunity to travel on special trains. One special train will originate at Fort Worth and Dallas and the other from Houston.

Dedication of Bureau of Mines Building at Bartlesville

The formal dedication of the new buildings at the United States Bureau of Mines experimental station at Bartlesville, Okla., October 19 and 20 provided two gala days for that city and a home-coming event for many former employes of the station. Director John W. Finch of the Bureau of Mines, was present to seal the corner stone and dedicate the building. A message from Secretary Ickes was read. Others who spoke were Clarel B. Mapes, secretary, Mid-Continent Oil & Gas Association; Wesley E. Disney, member of congress, and Charles C. Brown, Oklahoma tax commissioner and personal representative of Governor Marland.

A granite block inscribed "The First Commercial Oil Well in Oklahoma Completed April 15, 1897" was unveiled. This well is located in Johnstone Park within the city limits of Bartlesville.

Director Finch was accompanied by his assistant, Joseph H. Hedges, and R. A. Cattell, chief engineer of the petroleum and natural gas division, and A. J. Kraemer, senior refinery engineer. Others present were C. P. Bowie, supervising engineer, and H. C. Miller, senior petroleum engineer of the San Francisco station; E. S. Burnett, senior mechanical engineer, and P. V. Mullins, assistant chemical engineer of the Amarillo, Tex., station; H. B. Hill, supervising engineer, Gustav Wade, senior petroleum engineer, and C. B. Carpenter, petroleum engineer, of the Dallas, Tex., station; H. P. Rue, supervising engineer, H. W. Thorne, refinery engineer, and R. H. Espach, petroleum engineer, of the Laramie, Wyo., station.



First row: H. R. Straight, vice president and general manager, Empire Companies; N. A. C. Smith, supervising engineer, Bureau of Mines; Dr. John W. Finch, director, Bureau of Mines, Washington, D. C.; R. A. Cattell, chief engineer, Bureau of Mines, Washington, D. C. Second row: C. C. Brown, Oklahoma tax commissioner, and J. H. Hedges, assistant to the director of the Bureau of Mines. Third row: H. B. Owens, secretary, Chamber of Commerce, Bartlesville; C. E. Burlingame, Burlingame Petroleum Co., Bartlesville; John H. Kane, vice president and general counsel, Phillips Petroleum Co.; A. J. Deischer, president, Emerald Oil Co., Winfield, Kans. Fourth row: W. N. Davis, Foster-Davis Petroleum Co.; J. F. May, Bartlesville; Wesley E. Disney, congressman; J. L. Overlees, Bartlesville. Fifth row: R. J. Daugherty, mayor of Bartlesville

Southern Illinois

(Continued from Page 21)

in the logs. It, however, was a clue which led to the reconnaissance torsion balance survey made in 1930. This work which started at the Indiana line and crossed a portion of the old fields indicated a gravitational disturbance west of Olney, similar to that found on the south end of the La Salle anticline. The success of the reflection seismograph in Oklahoma and Texas led to a survey by that method in Illinois during 1935 and 1936. The seismograph work checked the existence of a structural disturbance running across Wayne, Richland, and Jasper counties. Drilling has so far confirmed the geological work.

Development

A block of 250,000 acres taken during the month of April, 1936, led to the drilling of a first test near Cisne in Wayne County, and the second test near Clay City in Clay County, 12 miles north. These tests discovered oil in sands of the basal Chester. Deeper drilling at Clay City on the Bunyan Travis farm discovered the first production in the McClosky sand of the Ste. Genevieve. This well's initial production was 2,640 bbls. per day from a depth of 2,964 feet. More recently, drilling has been extended northeastward 6 to 8 miles to the Noble area, Richland County.

The principal production so far has been from the McClosky pay horizon found in the top of the Ste. Genevieve of Mississippian age. It is one of the pay horizons in the south end of the old fields of Lawrence County where it was first discovered on the McClosky farm in section 25, Dennison Township. The McClosky is an oolitic limestone of varying porosity depending on the condition of the oolites.

The first wells in the Cisne and Clay City areas were drilled with standard tools. The Bradley test at Cisne was spudded November 3, 1936. It was completed in the Bradley sand of the Lower Chester on April 3, 1937. Information obtained by the first cable tool tests made it possible to use Mid-Continent rotary equipment with resultant increased speed and a great reduction in drilling cost. Wells are now drilled into the McClosky in less than three weeks. Good cores are obtained of the pay horizons.

Schlumberger electrical logs have been run in a number of key wells throughout the area and this method of logging will probably be of assistance in correlating beds drilled by the rotary but not cored.

The Section Drilled

Except for greater depths and increased thickness, the section drilled in the new area is similar to the south end of the old field. Starting with the base of the section which is the Ste. Genevieve the formations so far drilled are as follows:

Ste. Genevieve: The McClosky in the Clay City and Noble areas is found at a depth of 2,950 feet, which is approximately 50 feet below the top of the Ste. Genevieve limestone. The pay ranges up to 15 feet in thickness. One well in the Clay City area has drilled through the Ste. Genevieve, showing it has a thickness of 230 feet. In Lawrence County, the McClosky sand of the Ste. Genevieve is found at a depth of 1,600 to 1,800 feet. Published records show that the thickness of pay and type of porosity varied from one well to another. These wells had high initial productions in some cases, but they declined rapidly. Their production has been made from a great many pumping wells

Chester Formation: In the Cisne and Clay City areas the Chester is 1,000 feet thick, and sands in the basal portion are productive while sands of the Upper Chester carry salt water. The productive sands appear to be lenses, and although production may be spotted they will add considerably to the total production of the area, but so far have not been tested sufficienty to make estimates of their possibilities.

Subsurface work done so far indicates that the Chester may be divided into zones based on the content of micro-fossils. These zones conform fairly well with the subdivisions of the Chester established by Stuart Weller and published in his Hardin County report, Bulletin 41 of the Illinois Geological Survey. These relations are shown in the cross-section of Figure 2.

Pennsylvanian Formation: So far the 2,000 feet of this formation drilled in the new area has shown only salt water in thick sand bodies. It is possible that productive sands similar to the old fields may be found on the north end of the structure in Richland and Jasper counties where the Pennsylvanian is not so thick. The old fields produce from several shallow sands in the Pennsylvanian.

Madison

(Continued from Page 25)

fact that his gasoline is shipped in our cars."

Another letter from O. J. Tuttle of Empire Oil to Mr. Nagle reminded the latter not to forget to report all purchases each week to the W.P.R.A. Still another, from Mr. Nagle to Mr. Bourque, reported dates and amounts of gasoline purchases to be "credited to Skelly company on the inter-refinery buying agreement now in effect."

The last one read before the week-end recess was from Mr. Nagle to L. H. Toland of Kansas City. It read, in part:

"There is no reason for your not purchasing from the Russell Refining Co., Russell, Kans. . . . especially with the freight savings effected. . . . It should be borne in mind that such purchases, being made because of the freight savings effected, are not credited to us by the buying program committee handling inter-refinery purchases. . . . However, we can waive that credit when the actual cash in pocket savings are as much as they are in this case."

Additional interdepartment communications between executives of the Skelly company were read Monday and the prosecution opened a day-long effort to connect the defendant, E. B. Reeser, directly with the alleged conspiracy through an employe of Barnsdall Refining Corp.

The Skelly letters, exchanged between Mr. Nagle, Mr. Atkins, A. H. Prendergast and others contained such expressions as: "doubtless be credited against our January quota"; "on present program we are obligated to 50 to 60 cars a month"; "discharge our buying obligations," and "requiring us to take." One of Mr. Nagle's letters added, "We realize that under this buying program we can't always do what we want to do." Another said, "We haven't much choice" under buying committee allotments and "purchases assigned to us."

Julius C. Evans, Tulsa, assistant to the sales manager, said the Barnsdall company for years had purchased about half of its supplies from independents and the balance from Barnsdall Oil Co. While he named the Waggoner, Rock Island and Omar Refining companies as "dancing partners," he mentioned numerous other refiners from whom purchases were made.

Through him the prosecution sought to show that indicted companies, even when their supplies exceeded requirements, were purchasing from the small refiners. Mr. Evans said the Barnsdall's Okmulgee plant was closed early in 1936 but declined to state it was because of excess stock.

On several occasions Mr. Evans gave testimony which the court held was in conflict with statements made in two appearances before the grand jury last year.

He denied that E. B. Reeser ever took direct charge of the "distress" gasoline purchases or that any "instructions were received from the 'stabilization' subcommittee." Mr. Evans insisted he had been given "blanket authority" to make such purchases as he deemed advisable. He was unable to state whether quotations in the indicted journals affected the prices his company obtained.

"If the tankcar quotations in the journals go up 1 cent how much difference does it make in the money Barnsdall takes in the Standard Oil of Indiana territory?" counsel asked.

On account of the many complications involved, Mr. Evans replied he had no idea "how much more we'd get." He said the "distress" buying program was nothing unusual to him, as his company had bought from small refiners for many years.

He denied that Mr. Reeser told him any recommendations would come from the subcommittee and could not recall having testified before the grand jury that Mr. McDowell had said, "We will have instructions from time to time."

As he remembers, Mr. Evans told the court, Mr. McDowell told him, "We can tell you where you can buy distress gasoline and probably will call you from time to time."

Asked what Mr. Reeser told him to do, Mr. Evans declared the company's president pointed out that it was "always buying gasoline anyway," and that he had no objection to "our buying distress gasoline as long as we can fit it in with our needs."

The company, Mr. Evans testified, bought 24 cars in March, 1935; 29 in April; 20 in May; 26 in June; 15 in July; eight in August; 17 in September and 29 in October.

"Why did these amounts vary?" the court inquired.

"Because the total amount of our purchases varied from month to month," Mr. Evans explained.

The purchases of distress gasoline, he said, were made direct from refiners without intercession of the committee. The committee suggested sources and sometimes amounts, Mr. Evans testified, "but we didn't pay any attention to that if it didn't work in with our picture."

He insisted through a long grilling by both the prosecution and the court that Mr. Reeser never instructed him on the amount to pay. He didn't discuss prices with Mr. Reeser until after the purchases were made.

He was shown a chart depicting the trend of quotations in the journals from March 5 to June 7, 1935, and noted the upward curve.

"While these prices were rising, as the graph shows, were you getting suggestions from that committee to pay higher prices than those in the Journal of Commerce?" the prosecutor asked.

"Not that I remember," Mr. Evans answered, declaring if he ever paid the price Mr. McDowell suggested it was "entirely accidental."

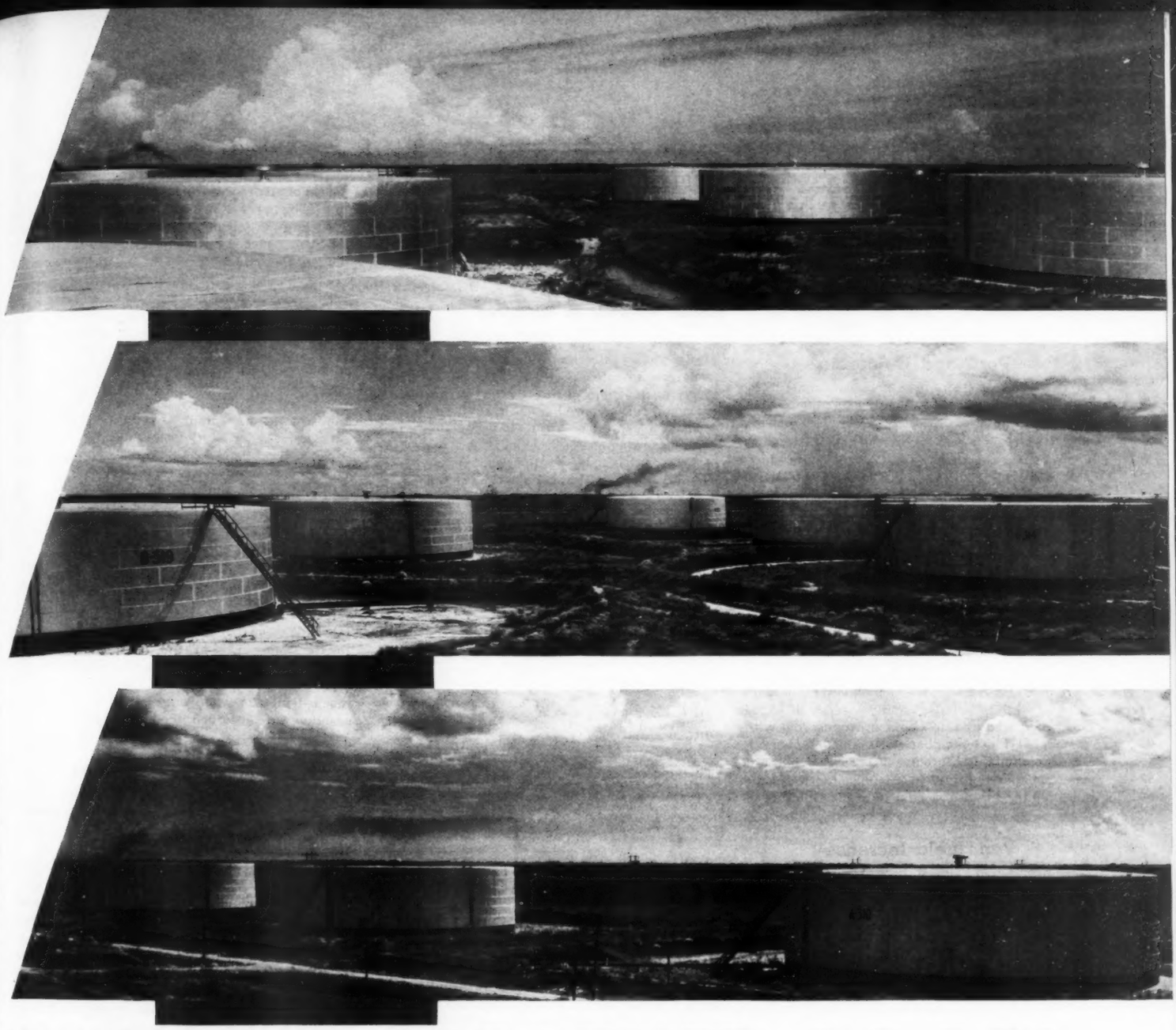
"Wasn't Mr. Reeser boosting the price quotations and telling you to pay it?" counsel persisted.

"No," Mr. Evans reiterated, and again, when the court injected the question "Did Mr. Reeser ever tell you to pay a higher price than those in the journal?" He replied, "No, your honor."

Mr. Evans testified that his company in 1935 made 30 purchases below the low of the Journal of Commerce, 21 at the low and eight above the low, but none above the high.

Similarly he said the Barnsdall Corp. made 32 buys below the low of Platt's Oilgram, 23 at the low, four above the low and none above the high.

On cross-examination Tuesday, Mr. Evans pointed out that his company bought more gasoline from outside sources in 1934 than in 1935, one of the alleged "conspiracy" years, and more in 1937, through September, than in all of 1936. At the end of his direct examination he said there are no records of his company's participation in the alleged activities of the "subcommittee," and was asked why he had destroyed copies of his memoranda sent to A. V. Bourque. They were no longer needed, he claimed.



WIGGINS BREATHER ROOFS

The three views above show a recent installation of twelve 118,000 bbl. Wiggins Breather Roof tanks at Houston, Texas.

BECAUSE of low cost and simplicity of operation, it is not unusual for the capabilities of Wiggins Breather Roofs to be underestimated even by experienced oil men. As a matter of fact, when used properly, Wiggins Breather Roofs approach very closely to 100% efficiency in preventing evaporation loss from oil in standing storage. Obviously, you can't ask for anything more from the most costly or most complicated kind of vapor saving equipment. The places where Wiggins Breather Roofs can be used to advantage are many. Old tanks as well as new can be equipped. Our nearest office will be glad to give you estimating data. Quotations on request.

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Philadelphia.....1615-1700 Walnut Street Building
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San Francisco.....1054 Rialto Building
Los Angeles.....1423 Wm. Fox Building

FABRICATING PLANTS in Birmingham, Chicago, and Greenville, Pa.

Oil News from Foreign Lands

Peru and Colombia

Crude oil production in Peru continues to lag behind output last year. The production for 1937 dropped behind the 1936 rate during August and barely more than held even during the past month.

International Petroleum Co., which produces all but about 7,200 bbls. daily of the crude recovered in Peru, reported 11,073,748 bbls. at the end of September. For the same period in 1936, International's recovery amounted to 11,233,765 bbls. Daily average yield from International's property last month was 40,219 bbls., compared to 40,209 bbls. in August. Lobitos (Shell) and Zarritos (F. G. Paggio) have combined production of about 215,000 bbls. per month, or a daily average of 7,165 bbls.

In Colombia, Tropical Oil Co., a subsidiary of International, continues to set new recent high production records. During September, Colombia's yield was 1,617,433 bbls., a daily average of 53,914 bbls., compared to 52,987 bbls. in August and with 52,509 bbls. for September, 1936. Since January 1, 1937, Colombia has produced 14,863,506 bbls. of crude compared to 13,976,503 bbls. for the same nine months in 1936, a gain of 887,003 bbls.

Venezuela Increase

Continuing an almost unbroken chain of increases this year, Venezuelan crude production of 17,422,361 bbls. in September, a daily average of 580,746 bbls., set another all-time record. The Tia Juana field on Lake Maracaibo was chiefly responsible. Production credited to Tia Juana amounted to 2,613,327 bbls., a daily average of 87,111 bbls., compared to 83,122 bbls. in August. However, Lago Petroleum Corp., one of the three acreage holders and producers in the new field lumps its lake production under Lagunillas. The September increases in production by Lago and Venezuela Oil Concessions, Ltd., were due in a large measure to Tia Juana.

The Quiriquire field in eastern Venezuela registered an increase in daily output to 72,922 bbls., compared to 72,205 bbls. the previous month. Colon Development Co. activity in the Tarra field is showing results and output there increased to 13,359 bbls. daily against 12,142 bbls. in August. During one 24-hour period the field produced 77,400 bbls.

Cumarebo, where production dropped from 7,142 bbls. daily in August to 6,774 in September, probably will stage a revival in the near future. Standard Oil Co. of Venezuela, operator of the Cumarebo field, is installing a central pumping unit. The unit will pump 20 or more wells and probably will serve to stimulate production from some of the older wells which are losing their natural flowing ability.

Colon Development Co. No. 2 Rosario, southwest of Lake Maracaibo, continues drilling as the deepest test in Venezuela. The test was last reported drilling below 9,030 feet after cementing 4½-inch casing at 9,010 feet.

Definite information is lacking on the southern part of eastern Venezuela where several producing wells have been completed by Mene Grande Oil Co. and Standard Oil Co. of Venezuela in the Oficina, El Salto and Temblador areas.

Practically all companies operating in Venezuela are having difficulty with the government involving questions of title. Until these are cleared, it is doubtful new production in the southern part of eastern Venezuela will be developed on a large scale. The title questions in some instances involve parts of concessions in the Lake Maracaibo district where production has been established for years.

VENEZUELA OIL PRODUCTION

	September		Daily av. Sept.,
By fields:	1937	1936	1937
Lagunillas	8,229,910	7,357,014	274,330
Quiriquire	2,187,646	2,165,792	72,922
La Rosa	2,086,657	1,839,064	69,555
Mene Grande	1,400,201	1,519,600	46,673
Tia Juana	2,613,327	.....	87,111
Tarra	400,780	339,400	13,359
Pedernales	151,586	.....	5,053
Concepcion	85,608	89,800	2,854
Cumarebo	203,208	204,666	6,774
El Mene	52,890	69,240	1,763
La Paz	10,548	11,900	352
Total	17,422,361	13,596,476	580,746
Daily av., August	551,373	.....	.....
Total August	17,092,561	.....	.....
Dly. av., Sept., 1936	.....	453,217	.....
By companies:			
Lago Pet. Corp.	5,729,950	4,379,451	190,998
Ven. Oil Concessions	4,753,477	3,224,400	158,469
Stand. of Venezuela*	2,900,261	2,743,219	96,675
Caribbean Pet. Co.	1,400,201	1,519,600	46,676
Colon Development	400,780	339,400	13,359
Mene Grande Oil Co.	2,134,000	1,270,000	71,113
British Controlled	52,890	69,240	1,763
No. Venez. Pet. Co.	50,802	51,166	1,693
Total	17,422,361	13,596,476	580,746

*Includes Creole's share in La Rosa 38,835 bbls., and Lagunillas, 369,788 bbls.

Standard Oil Co. of Venezuela, subsidiary of Standard Oil Co. (New Jersey), is making an extensive bid for broad scale production in eastern Venezuela where the company is in various stages of progress of 12 wildcat operations. A bulk of the work is concentrated in the Temblador-Tabasco area along the district boundary separating Sotillo and Maturin in the state of Monagas. Mene Grande Oil Co., subsidiary of Gulf Oil Corp., has entered the Temblador-Tabasco area and is engaged on two operations. Out of the 12 operations accredited to Standard Oil Co. of Venezuela five are reported standing, two at plugged-back depths.

There is no new current development reported in Mene Grande area.

Production in Egypt

Egypt produced 14,520 tons of crude oil during July. In addition it produced 381 tons of natural gasoline. Total liquid petroleum production for the month was 14,901 metric tons, about 104,310 bbls., or 3,370 bbls. daily.

Gasoline Demand in Poland

Gasoline consumption in Poland is running far ahead of all preceding years with exception of 1931, the boom period in that country. With internal consumption forging briskly ahead, new demands are being placed on the producing branch of the Polish oil industry to maintain normal export.

In response to the increasing demand, crude oil production in July increased to 43,210 metric tons, about 302,470 bbls., compared to 40,980 tons in June. Deliveries to Poland's 26 active refineries during July consisted of 40,980 tons of crude, from which was refined 38,304 bbls. of products. Total domestic consumption of products during July amounted to 27,874 tons and exports were 13,710 metric tons. More than 30 per cent of the export business was done with Czechoslovakia. Great Britain, Austria, Danzig and Gdynia were important consumers of Polish oil during the month.

Poland's internal gasoline consumption during August increased 23 per cent over the same month in 1936. This year's increase was more pronounced in the preceding month when consumption was 46 per cent greater than in July, 1936. This August, the gasoline market absorbed 9,100 metric tons, compared to 7,400 tons for the same month in 1936. For the first eight months gasoline consumption totaled 51,900 metric tons, compared to 40,900 tons for the same period in 1936. The highest consumption figure for any eight months was in 1931, a total of 55,000 metric tons. The recent low was reached in 1934 when only 39,000 metric tons of gasoline were absorbed in eight months.

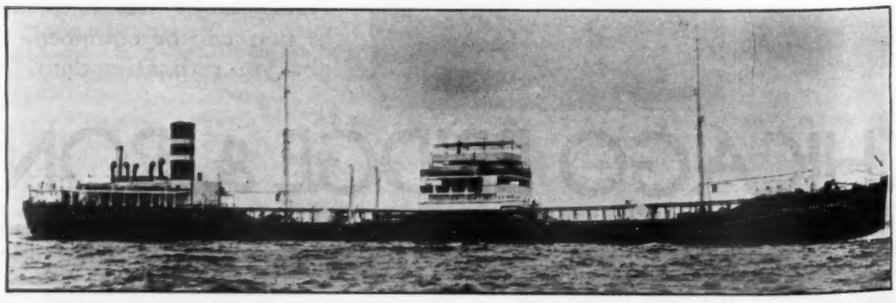
Wood Fuel For Buses

By a decree recently published in France, one out of every ten buses and automotive commercial vehicles will be compelled to operate on wood fuel not later than July 1, 1938.

Experiments with wood fuel have been under way and many army trucks are said to have operated satisfactorily on it for sustained periods. Wood coke has been compressed into small "bricks," under the French scheme to replace petroleum as motor fuel in part of its automotive fleet, and it is said that 40 pounds of "bricks" will operate a truck under normal load for 24 hours.

Only the minister of public works will be empowered to authorize any national "motive force" to use other than the required amount of wood fuel after the decree becomes effective.

Other such programs have been attempted in European countries, but so far the practice is unsatisfactory and where decrees of compulsion remain on record the usual practice is to ignore their enforcement. Therefore, little concern is felt among American companies interested in French refineries over the continued expansion of demand for motor fuel and other petroleum products. It was thought in some quarters that the decree referred only to government equipment and that it was an effort to make available greater supplies of quality motor fuel for military maneuvers with tanks, motorized artillery units and airplanes without increasing the army budget for motor fuel.



Anglo-Iranian tanker "British Endurance," 12,275 tons

ENGINEERING AND OPERATING SECTION

Presenting modern developments in operation of producing properties, refineries and gasoline plants, and pipe lines, including petroleum research in the field and laboratory

This Week

TOTAL RECOVERY USED AS A GUIDE TO ESTABLISH TYPE OF PRODUCTION PRACTICE IN SMACKOVER—By Mitchell Tucker ..... **Page 44**

Exemplifying the present trend in some old, partially depleted fields, close studies of percentage recovery and recovery per acre-foot are being made in the Smackover field with the view of determining recovery practices most efficient for the stage of reservoir depletion. Several interesting experiments are under way in an attempt to reduce lifting costs and water-to-oil ratios, thus reducing the overall operating cost.

GEOLOGICAL APPLICATION OF ORIENTED CORING—By A. B. Patterson and J. K. Butler ..... **Page 46**

Oriented coring offers a valuable means of checking actual dip of beds against information obtained by geophysical surveys. Present methods of obtaining cores are outlined and possible information derived through orientation of cores discussed.

PROPERTIES OF KANSAS OILS SHOW FEW CHANGES IN TEN YEARS—By W. L. Nelson ..... **Page 48**

Despite the large number of small fields discovered in the past 10 years, properties of crude produced in Kansas show very little change. Data on type of oil produced, average A.P.I. gravity, sulfur content, per cent gasoline and an analysis of changes are given.

THE HOWARD PROCESS APPLIED TO TREATMENT OF REFINERY GASOLINES—By Emby Kaye ..... **Page 50**

Several new processes of treating refinery gasoline have been developed in the past few years in an attempt to improve gasoline quality by chemical treatment. The Howard process, in which gasoline vapors are passed through a bed of oxidized zinc is described and results of tests in a semicommercial plant given.

ILLUSTRATED OPERATING IDEAS ..... **Page 55**

Traveling crane for dock. Crude-oil pump operated by bandwheel. Support for walkway to mud suction lines. All-weather meter house. Water sprays for protecting christmas trees from nearby fires.

LOW-TEMPERATURE FRACTIONATION OF GASES, VAPORS AND LIQUIDS—By F. N. Laird ..... **Page 58**

Low-temperature fractionation equipment has been limited in use to fixed location, due to lack of portability, fragility and length of time required to complete tests. An all-metal apparatus has been devised that eliminates many of these factors, details of which are described and results of tests made with the portable fractionation equipment are discussed.

PROBLEMS FROM READERS—By L. G. E. Bignell ..... **Page 69**

Comparison of wildcat successes. Time required to empty oil tank. Heaving shale drilling operations. Devonian production in Canada. Wants investment in petroleum industry to make "real" money.

QUESTIONS ON TECHNOLOGY—By C. K. Francis, Ph. D. ..... **Page 70**

Quality of crude oil produced in Germany. Limitations on manufacture of carbon black and process yields. Size of particles of carbon in gas flame. Reconversion to acid disposes of acid sludge problem.

Total Recovery Used as a Guide to Type of Production Practice in S

By MITCHELL TUCKER

Experiments now being made in the Smackover field of southern Arkansas on the economy, feasibility, and probability of reviving production from apparently depleted sands is representative of the current trend throughout the industry. Close studies of percentage recovery and recovery per acre foot in all producing zones are being made as a guide to employing more effective recovery practices at this stage of reservoir depletion. Detailed geological studies of the past reservoir performance, and its present condition, are a necessary forerunner to such experiments.

The Smackover field is the sixth largest producer in the country from the standpoint of accumulated recovery, being exceeded only by the Midway-Sunset, Long Beach and Santa Fe Springs fields of California, the Greater Seminole area, and the East Texas field. However, under present recovery practices at Smackover, most of the wells are operating very close to the dividing line between profit and loss.

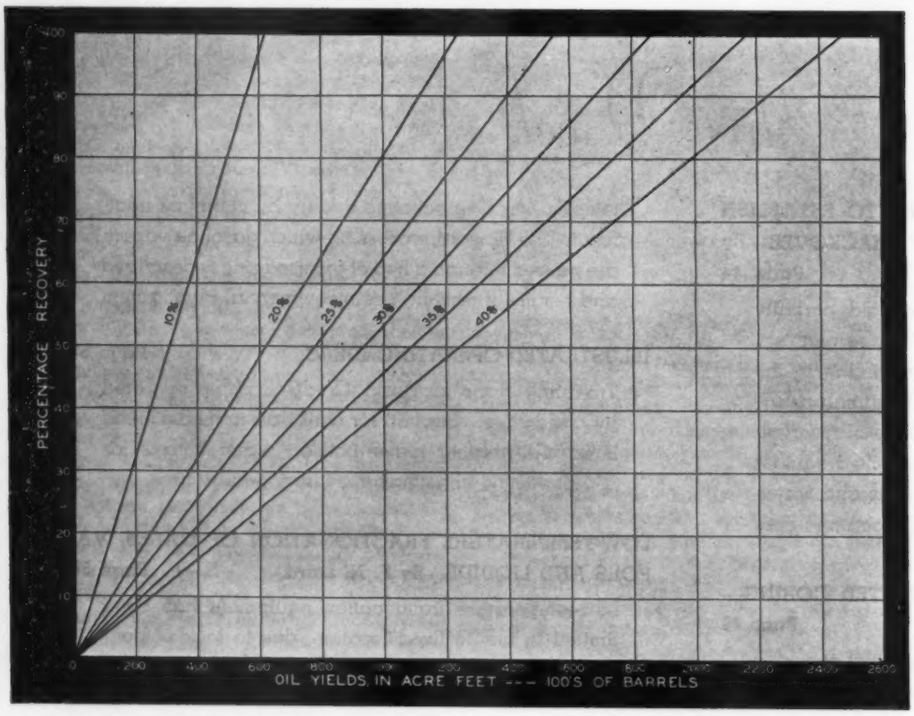


Fig. 1—Percentages of recovery. Known acre-foot yields, 80 per cent saturation

In this discussion, only the heavy oil district, or the Norphlet dome at Smackover will be considered. This portion of the field exceeds the Louann or light oil district slightly in productive acreage, and greatly exceeds it in recovery per acre foot. The accompanying Table 1, sets out the depth of occurrence, productive acreage, recovery to January 1, 1937, and gravity of the oil produced from the four producing zones on the Norphlet dome.

It is apparent that the Graves sand has been the most productive. During the early life of the field initial productions averaged about 2,000 bbls., but some were as high as 70,000 bbls. per day. A relatively small amount of gas was associated with the oil in this horizon, as compared to the Nacatoch and Meakin sands above, and the fact that an active water drive was behind the Graves saturation was established soon after its discovery. Due to the high initial productions from the Graves, this zone suffered greater withdrawals and dissipation of reservoir energy than the others, and the results of such harmful producing practices are reflected in present-day conditions. Wild wells, craters, wide open casing flow, etc., all accompanied early Graves sand production. Figure 2 shows decline curves of the different sands. Note that the Graves reservoir underwent very rapid declines during its early life.

The pumping of fluid volumes ranging up to 1,000 bbls. or more per day from Graves sand wells, with only one-half to 1 per cent oil, is now the rule rather than the exception. This condition is made increasingly difficult when handling this volume with fully depreciated pumping fronts through crooked holes and under severe corrosive and sand conditions. It is undoubtedly one of the country's most difficult lifting jobs. Pumping costs in many instances far exceed the pipe line price of the crude, and if it were not for the fact that the by-products from the oil, with its high lubricating quality, octane value, and top grade asphalt residue, were worth a great deal more to the refiner than the posted price, the affiliated producing companies would have no incentive for continuing most of their operation from this sand.

Recognizing that something must be done if possible to improve producing conditions from the Graves level in particular, several very interesting and possibly far-reaching experiments are being either considered or under way to reduce the large water-to-oil ratios, and achieve an accompanying increase in profitable oil production and ultimate recovery per acre.

A detailed study of the geology and past reservoir performance must precede any experiments of this kind if they are to have the best chance for success. Recoveries per acre foot, percentage recovery, sources of the present and past water production and hydrostatic head, and other data must be assembled before any proper or intelligent consideration can be given to future recovery practices.

Graves Sand Production

The Graves sand, being the deepest and having yielded the greatest per acre foot recovery, and having undergone greatest early dissipation of natural energy and greatest encroachment of water, is being given first consideration. This zone has been productive throughout an area of 6,530 acres. Its average thickness was 60 feet, the oil-producing portion ranging from 15 to 20 feet in thickness, or an assumed average of 17½ feet. Its accumulated recovery to January 1, 1937, was approximately 136,162,611 bbls., representing a yield of 20,545 bbls. per acre or 1,174 bbls. per acre foot on that date. Many early wells were so poorly logged that perhaps these calculations, made from available data, are not as accurate as may be desired, but they do serve as a guide for general reservoir studies.

A knowledge of the per cent of recovery to original oil sand content will influence the determination of future production practices. This calculation may be made with a sufficient degree of accuracy for the entire dome in the commonly used formula as follows:

$$\frac{\text{Total Production}}{7{,}758 \times P \times S \times T \times A} = \%\ \text{Recovery}$$

Where:

P = Per cent porosity.
S = Per cent saturation.
T = Thickness of oil-producing zone in feet.
A = Number of productive acres.
7,758 = A constant representing volume in barrels of 1 acre foot (43,560 cu. ft. per acre foot, divided by 5.61, the number of cu. ft. in 1 bbl.).

Applying assumed average values for the Graves sand of 25 per cent porosity and 80 per cent saturation, the percentage recovery will equal 77

to Establish

Smackover

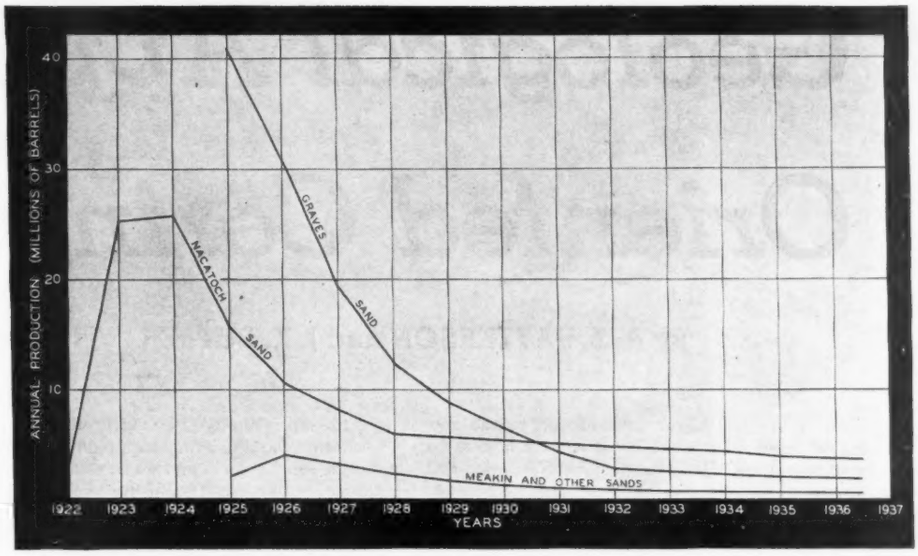


Fig. 2—Decline curves of individual sands, Norphlet dome, Smackover field

per cent. At first glance this seems highly improbable, but when considering the number of years which this very effective natural water drive has been acting upon this viscous oil, this percentage recovery is conceivable. Rather recent connate water tests tend to confirm the 80 per cent saturation factor used, and the assumed porosity factor of 25 per cent offers the greatest opportunity for error in the calculation.

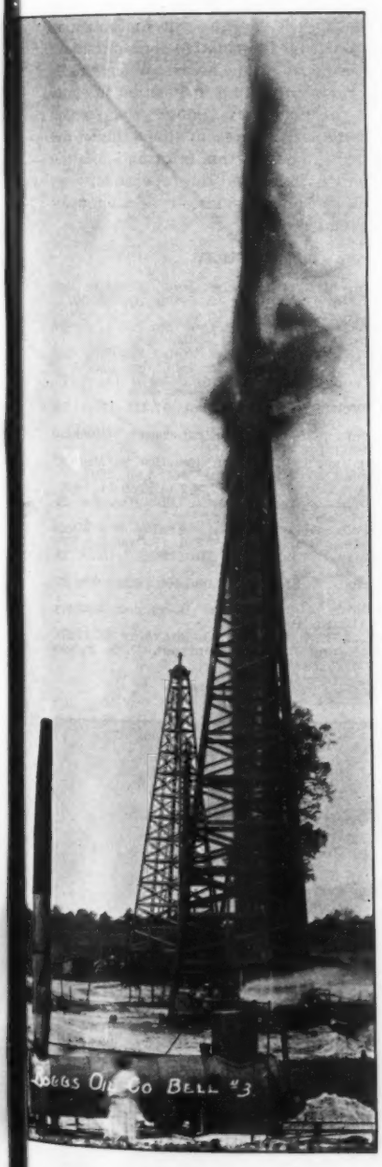
The Graves sand consists of fine to coarse quartz grains, varying in shape from angular to round. It is known that absolute porosity for spherical grains of uniform size is 25.97 per cent, and the assumed figure of 25 per cent average seems generous on its face. It is known, however, that the porosity throughout the entire dome is not constant, as indicated by the widely varying initial productions of from 1,000 to 70,000 bbls. per day. The occurrence of thin indurated sand lenses has no doubt modified the sand's porosity greatly in certain portions on the structure. It is, therefore, apparent that percentage recoveries must more properly be considered on individual properties in different portions of the reservoir with respect to the prevailing porosity and structural conditions.

For this purpose, Figure 1 is offered, which gives in graphical form a means of readily determining percentage recoveries for varying porosities under known recoveries per acre foot, and 80 per cent saturation.

Applying an average porosity factor as high as 40 per cent (by trial and error) and with the known recovery per acre foot, a percentage recovery of over 50 is indicated. In discussing "Acre Foot Yields of Texas Gulf Coast Oil Fields," Alexander Deussen states with regard to the average percentage recovery in all fields, "most authorities will agree, I believe, that it does not in general exceed 40 per cent." *(A.I.M.M.E. Petroleum Development and Technology, 1936).* Hence, even though the lack of reliable data from early wells leaves the actual percentage recovery from the Graves sand uncertain, it may be concluded that it has been very high in comparison to most other areas, and future production practices must be governed accordingly.

Applying the same calculations in determining percentage recovery of fluid even from the total thickness of 60 feet of Graves sand, and using only a very conservative estimate of water production over life of the field, it is readily apparent that the volumetric withdrawal has been several times that of the total void space of the reservoir. This, of course, immediately establishes the fact that a great portion of the Graves water was extraneous.

Even in view of the very high percentage recoveries of oil to date, and the presence of large salt water volumes from extraneous sources, the experiments to date in reducing water to oil ratios have been encouraging, and point to an even higher profitable percentage recovery.



Early scene at Smackover, showing a Graves sand well flowing wild at the estimated rate of about 50,000 bbls. a day

TABLE 1—PRODUCING SANDS IN NORPHLET DISTRICT, SMACKOVER, ARKANSAS

Name—	Occurrence	Productive acreage	Jan. 1, 1927 cumulative production	Avg. A.P.I. gravity
Nacatoch	1,925-2,150	15,425	134,221,500	20
Meakin	2,310-2,330	6,530	Mostly gas	25
Graves	2,340-2,500	6,530	136,162,611	21
Third or 2,600-foot	2,550-2,660	8,575	*19,200,355	19–24

*Includes small production from the Meakin sand.

In the initial experiment a mechanical siphon device, flowing against a restricted choke in the tubing flow string, was used. It was installed about one-third down in the 1,000-foot fluid column. Pressure was admitted into the device, and applied upon the formation itself, through the annular casing-tubing space from a portable compressor setting at the surface. By maintaining about 300 pounds back pressure, experimental data indicated that the water cone or encroachment was minimized, if not stopped. The only water which would be produced, theoretically, would be the amount already in the oil sand because of the cone, and with continuous production at a rate which would not permit the feeding in of bottom water against the back pressure applied, a clean pipe line oil well should result.

Prior to the application of back pressure in this manner, the experimental well was pumping about 880 bbls. of fluid per day, of which about 10 bbls. was oil. With the siphon in operation, fluid production dropped to 120 bbls. of water and 3 bbls. of oil. In other words, the water-to-oil ratio was reduced from 88 to 1 before, to 40 to 1 afterwards.

The experiment might not have been economically successful, due to the costs of operating a compressor, and possible cutting of the viscous oil when agitated with air, but it did lend weight to the theory that water-to-oil ratios can be materially reduced by properly placing and maintaining a bottom-hole pressure on the formation during the producing period of the well.

Assuming that a large portion of the otherwise recoverable oil was trapped during the early days when excessive encroachment of bottom water was encouraged by large volumetric withdrawals, the five-spotting or inside drilling of certain areas is being considered.

The present estimated percentage recovery from the Graves sand indicates that although a large portion of the original oil content might have been trapped between well bores in the sand, it has been rather well recovered due to the sweep of the extraneous water across the formation, in the form of a natural water drive. At any rate, drilling of new inside locations at high points on the structure, and under favorable porous conditions, offers attractive chances for profitable producers, and for obtaining even greater percentages of recovery. Newly developed portable rotaries would minimize the cost of such drilling. Modern completion and producing methods could be applied from the beginning, and water encroachment at the new locations controlled. Lower lifting costs from such completions would serve to reduce the overall cost per barrel on other properties in the district, and in some cases change the company's operation from a losing into a profitable one.

Geological Application of Oriented Coring

By A. B. PATTERSON and J. K. BUTLER
The Texas Co.

As an introduction to the geological application of oriented coring, it may be well to outline briefly the history of this art and discuss to some extent the present methods of obtaining the required information.

As early as 1888 we find the use of the Kind[1] method in Germany. This method incorporated the use of a forked bit using the Kind freefall percussion system of drilling. The core was cut and left in the hole. Rods, to which were attached a core lifter, were then oriented into the hole, and by this method the core was drawn to the surface. Great care was exercised in the withdrawal of the rods so as not to twist them, thereby effecting the results.

A method was devised by Vivian,[3] an American diamond-drill engineer, which required the drilling of a small pilot hole into which was set a compass clamped by the weight used in setting. A core was then taken recovering the compass case in the top. This method was never particularly successful due to the breaking of the core and the pilot hole filling with cuttings.

McGeorge[2] developed a method somewhat similar to the Kind method, in that a core was taken with the catcher left out and a lifting device was run into the hole over the stub. Attached to this lifting device was a compass which was set in place by gelatin congealing in the case. Objections to this were the interference of cuttings and the bottom-hole temperature which prevented proper hardening of the gelatin.

Many other methods were designed which enjoyed indifferent success. Among these were the Lubitsch,[4] Kendall,[5] Wolff,[6] Gotham,[7] Meine,[8] Koerner,[9] Goodman,[10] Jean Florin,[11] Atwood,[13] Mitchell,[15] Reinhold,[14] Dixon,[15] and Hall-Armentrout[16] methods. Roughly all of these can be classified into four distinct methods. First, the core is oriented by orienting the rods or drill pipe out of the hole, as in the Kind method; second, an instrument is attached to the core and then withdrawn from the hole, as in the Vivian method; third, a recording instrument is attached to the core barrel while the core is out, as in the Gotham method; and fourth, the wall of the hole is photographed with a special camera, as by the Atwood method.

The two methods now in use for orienting cores are: First, the McReady method, and second, the orientation of the core itself by measuring the residual magnetism present in the core.

The McReady device consists of an orientation core drill having a bronze drill collar, an inner barrel swivel within the outer barrel, and a photographic recording instrument which is carried on the inner barrel. This instrument gives a record of the position of the core barrel at regular intervals during the time that the core is cut and from this record the dip angle and direction of dip is determined after the core is withdrawn.

The second method used at the present time requires the obtaining of a core which is firm enough to allow cutting and sizing, and which indicates the dip of the beds by sufficient lamination. The core is placed in a magnetic field and readings are made for the north and south poles. From this information, the direction of dip and angle of dip may be made. Although results obtained by this method have been outstanding for hard formation regions, it does not seem to be particularly accurate in soft formation areas, such as the Gulf Coast. It has been found that the obtaining of a core with sufficient firmness to allow necessary sizing, etc., and at the same time have representative bedding planes was practically impossible.

A.S.M.E. **— Presented before meeting of petroleum division, Houston, Tex., Oct. 12, 1937.**

However, should the operator have formations present in a wildcat well which, upon coring, would be found applicable to the art of orientation, or which could be oriented with a core barrel, he would have the advantage of being able to check actual dip of beds against the information obtained from the geophysical survey. This dip and direction, acting as a double check, would enable the operator to make a more intelligent decision as to the second location in the prospective field. The angle and direction of dip of the various geological horizons would also give some help in locating the various highs in the field. For example, a high caused by a deep-seated dome or structure has, in many cases in the Gulf Coast, one high point for the Miocene, the Oligocene and the Eocene, all of which would be different. Attention to the oriented cores should help in locating and outlining these various highs.

Where water and gas contacts are known due to the actual testing of the producing formation, the direction and angle of dip would enable the operator to prepare a reasonably close estimate of the limits of production and consequently make a possible approximate evaluation of the property.

In drilling of faulted structures, the attitude of the various portions of the high can be determined to some extent from oriented cores. The use of this method should enable the operator to set forth an elementary picture of the field before drilling too many wells.

Drilling of piercement type salt domes offers an application of the oriented cores in conjunction with the use of directional drilling. Determination of dip angle and direction with one or two wells is at best a hopeless task. The use of the information obtained from the cores, however, should enable the operator to make preliminary contours on the objective sand.

In working out the details of a structure, the dip as obtained from the cores would be of some value, but it would be impossible to enumerate all of them. Probably some time in the near future the technique may be worked out for obtaining this information from the relative soft formations which are present in some areas. When this is done, the operator should be in position to eliminate some of the necessary "guess" work which cannot be avoided at the present time. One of the outstanding advantages of this information is the confidence which it gives the operator when placed in the position of making a decision upon purely theoretical geology.

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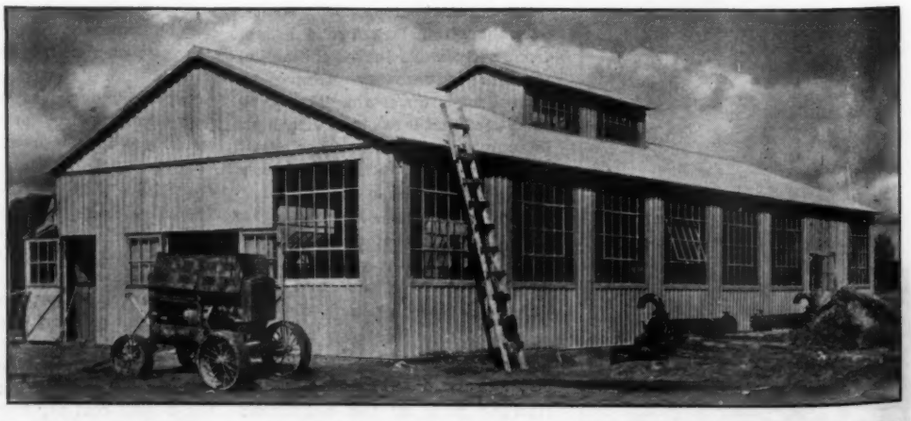
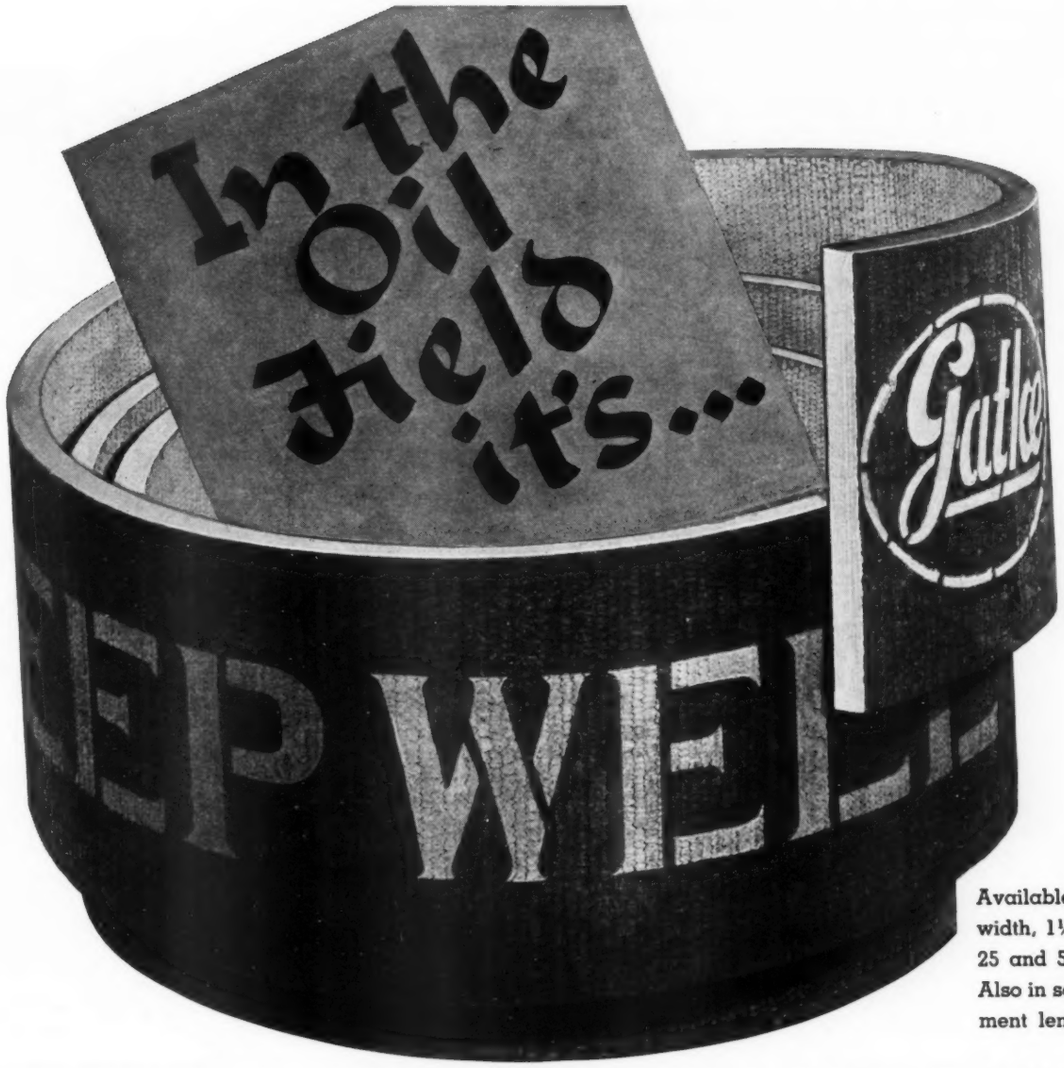


Steel house being constructed at Pure Oil Co's initial pipe line station near Noble, Ill.



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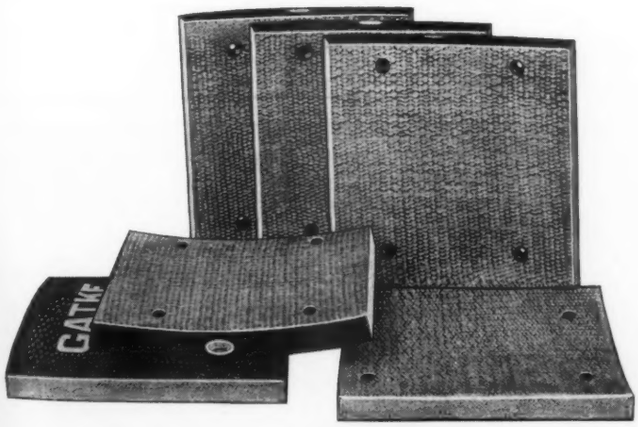

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Properties of Kansas Oils Show Few Changes in Ten Years

By W. L. NELSON

The properties of the oils that have been produced in Kansas are remarkably constant considering the large number of small fields. During the past 10 years only seven Kansas fields or districts produced enough oil to be classed among the 99 largest fields in the United States. The production from the 99 largest fields was published in The Oil and Gas Journal of January 28, 1937, page 42. The approximate properties of the oils produced in the seven large Kansas districts are given in Table 1 and a graphical analysis of the changes in these properties for the past 10 years is given in Figures 1, 2, 3 and 4.

The average gasoline content, as shown in Figure 1, was influenced most greatly by the advent of the McPherson County fields in 1930 and coming to a peak of 11,000,000 bbls. in 1933, and by the Rice County fields, which contain a large amount of gasoline. The Rice County fields became important in 1933 and in 1937 reached a peak of over 11,000,000 bbls.

The average sulfur content was also affected by the Rice County and McPherson County fields, but in this case the low sulfur content of the McPherson County oil (0.14 per cent) has tended to keep the average sulfur content down since 1933. The relatively high sulfur oil (0.50 per cent) from Russell County had little effect prior to 1933, because the production remained almost constant, but since 1933 the ever increasing production from Russell County has tended to raise the average sulfur content.

The average gravity of Kansas oil has also been governed to a large extent by the production from Rice, McPherson and Russell counties. Of these, the oil from Rice and McPherson counties is lighter than the average over a period of years, and the Russell County oil is low in gravity.

TABLE 1—PROPERTIES OF KANSAS CRUDE OILS

Field—	Gravity A.P.I.	Per cent sulfur	Per cent gasoline and naphtha	Base	Max. prod. in the year	References
Sedgwick County	37.0	0.31	30.0	Inter.	1929	(8)
Eldorado-Augusta	34.4	0.29	27.3	Inter.	1927	(2)
Greenwood County	40.0	0.22	35.0	Inter.	1927	(8)
Rice County	46.4	0.27	55.6	Inter.	1936	(9)
Russell County	33.6	0.50	32.8	Inter.	1936	(8) (9)
Sumner County	39.0	0.21	32.5	Inter.	1928	(14)
McPherson County	41.0	0.14	38.3	Inter.	1933	(8)

The amount of production from the Greenwood County fields and the Augusta-Eldorado area has been relatively steady during the 10-year period and has served as a balance wheel in maintaining a uniform quality of oil from the Kansas district.

Other articles of this series on properties of crude oils appeared in the July 29, August 5, August 19 and September 2 issues of The Oil and Gas Journal. The concluding article will appear in a subsequent issue.

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Course in Catalysis Offered

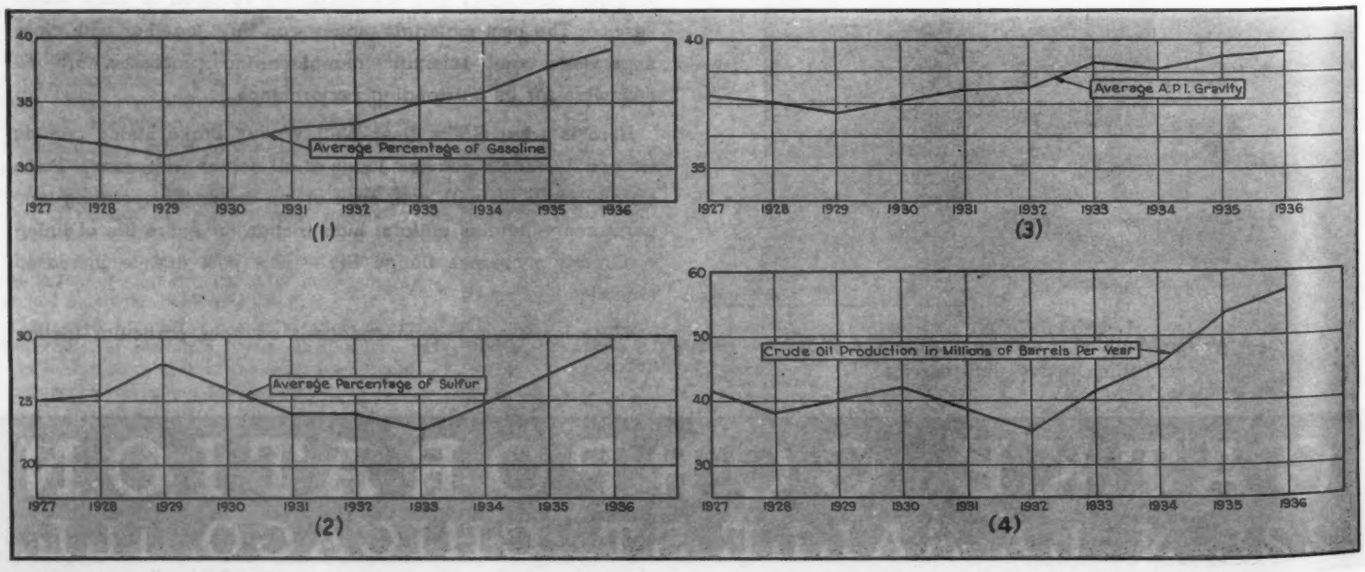
Dr. V. I. Komarewsky, professor of chemistry at Armour Institute, Chicago, is giving two courses of great interest to students of petroleum chemistry: First, "Catalysis in Chemical Reactions," and second, "Chemistry of Motor Fuel." In the first course the most important organic catalytic reactions will be discussed, different theories of catalysis presented, and a discussion of the physical chemistry of catalytic phenomena given. In the second, different sources of liquid motor fuel will be discussed and their properties defined. Doctor Komarewsky's research work is being supported by Universal Oil Products Co. The company is also supporting two fellowships in connection with these courses.

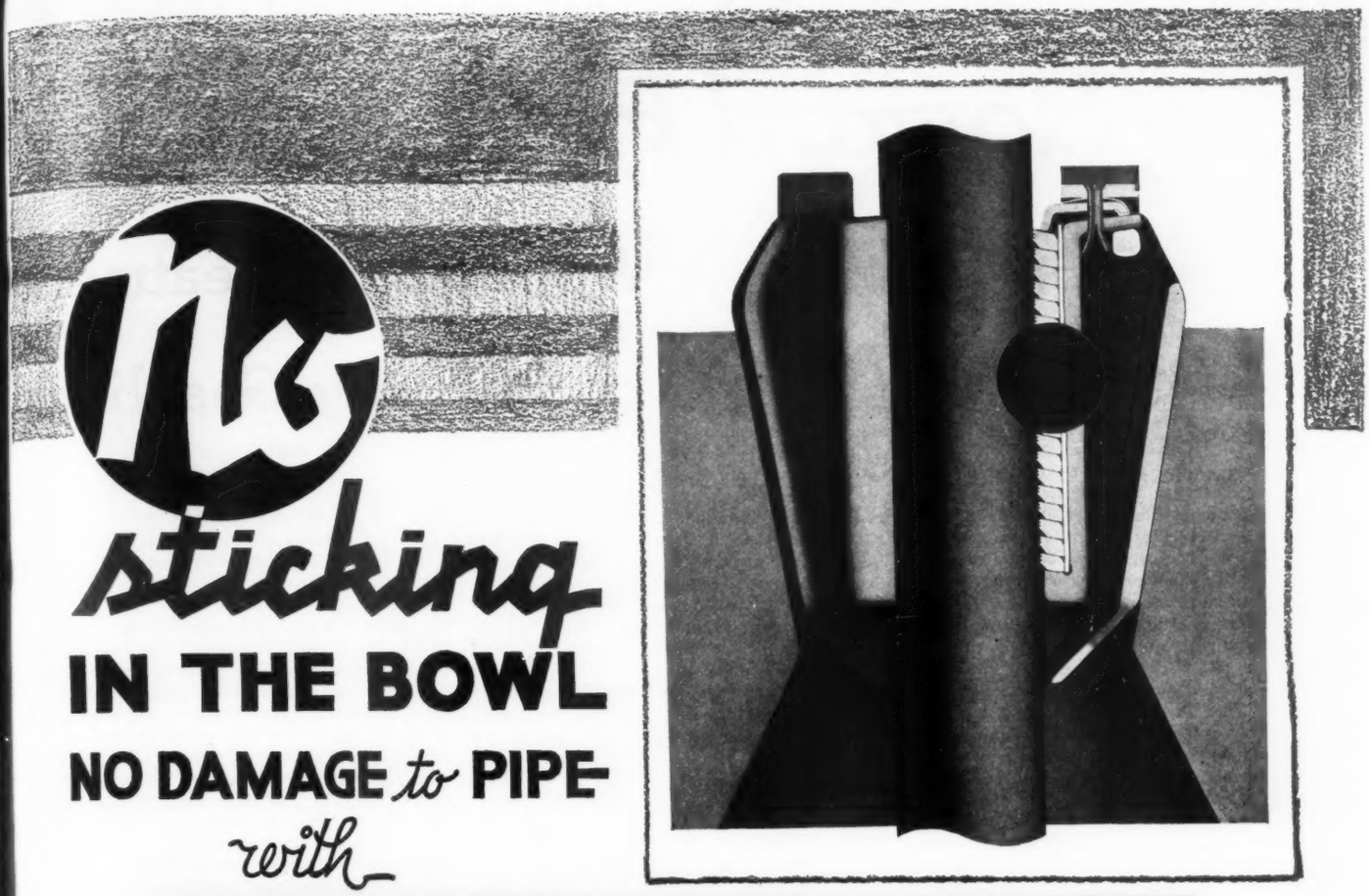
Thermodynamics Class Formed

The University of California extension division announces the formation on Friday evening, October 29, of a class in "The Principles of Thermodynamics," to be conducted by Llewellyn M. K. Boelter, professor of mechanical engineering at the University of California. The class will meet in Room 515 Hillstreet Building, 815 South Hill Street, Los Angeles. This course is offered for professional engineers, its prerequisites being senior standing in an engineering college or the equivalent.

Author's Revision

The sentence in column two, page 52 reading, "For naphthas requiring approximately 3 cc.'s of lead to 70 octane before treatment, the lead required was reduced to 1 cc." should read, . . . "the lead required was reduced *by* 1 cc."





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The Howard Process Applied to Treatment of Refinery Gasolines

By EMBY KAYE
Skelly Oil Co.

There has been a good deal of speculation since this subject was announced as to what the Howard process is, what it does, and how it does it. Let it be understood at the outset that this paper has been prepared on my own responsibility. The owners of the process declined to present a paper on the subject at this time, for reasons which will become evident later on herein. I intend to discuss these enumerated items largely on the basis of development work which has been done in a semicommercial plant. Several commercial installations are now in progress and it is hoped that in these plants the lessons taught by the pilot units will be translated into commercial operation. Indeed, a good deal of this has already been accomplished.

During the past several years, a number of treating processes have been developed and commercially introduced in refineries from coast to coast. These processes have sought among other things to improve gasoline by chemical treatment. One process polymerizes gum, another sweetens gasoline by a method new to the industry, and still another process sweetens gasoline by a method which represents a variation of the conventional doctor treating. Closely related to gum polymerization is the increasing use of inhibitors which retard the formation of gum. Inhibitors have also been developed for use as color stabilizers. One of the processes referred to, in addition to polymerizing gums and eliminating them from the gasoline stream, stabilize the products for color. Still another process has been developed and used by several large companies, in which the gasoline is washed with strong caustic solutions and doctor treating as such eliminated.

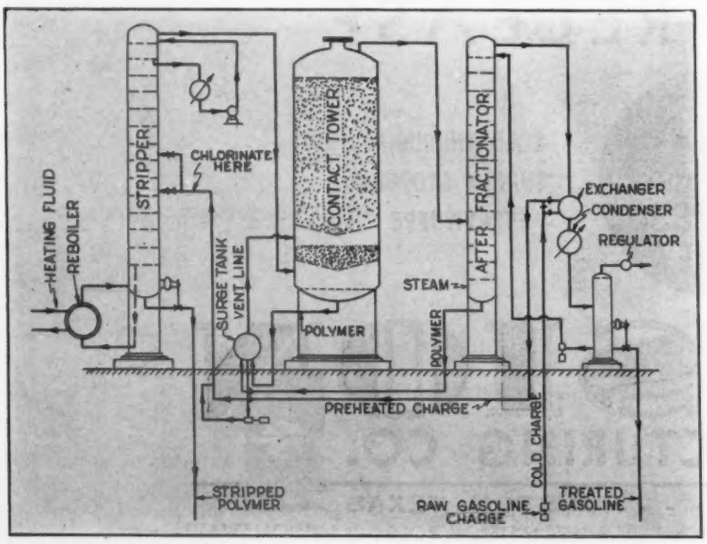
In some of these processes, the objective of course is the elimination of acid treating and rerunning, while in others it is the elimination of conventional doctor treating. The objectives are the elimination of the losses inherent in their use as well as the degradation of the product either as to octane number or lead susceptibility, in addition to other economies.

The process which I shall discuss accomplishes these results in one operation, and I should say that as far as observations have been made it does the job better in some respects. Gasoline—straight-run or cracked—treated by the process is of excellent odor, of good color, is sweet and noncorrosive, gum free, of as good as or better octane than the untreated gasoline, and substantially better in lead susceptibility. In addition, the sulfur content of the gasoline is reduced.

This process has been under study for a great many years. The Petroleum Research Corp., under its chief chemist, Roscoe D. Howard, has during the past several years brought many years of effort to what may be considered successful fruition. In its essence, it is a vapor phase treating process, not unlike in its physical operation other processes with which the refiner is familiar.

W.P.R.A. **— Delivered before Regional Meeting, Shreveport, La., October 22, 1937.**

The flow through the treating unit is illustrated in the accompanying chart. Stabilized gasoline, with propane, hydrogen sulfide, and excess butane eliminated by fractionation, and to which chlorine has been added, is vaporized in a fractionating column and the vapors passed into a contact tower below a bed of oxidized zinc, like zinc oxide or zinc oxychloride, which is dispersed through the tower in a solid binder of one of various possible kinds. The vapors issuing from the tower are then fractionated and the overhead condensed as finished gasoline. Polymers from the final fractionator and from the bottom of the contact tower are fed into the stripper tower with the raw gasoline and ultimately the bottoms from this tower, containing all of the stripped polymers, are diverted to fuel oil or to other operations, according as is the usual practice in the particular plant.



Flow diagram of the Howard process for treating light distillates

Discussion of unit capacities, volume of zinc oxide per daily barrels of charging stock, rate of flow and other data are designedly not included herein, possibly because of lack of general interest in details at this time. While several specific inspections of products, before and after treatment, will be shown, some general comments might be made regarding the types of improvement along the lines indicated above which may be anticipated by subjecting gasoline to this process.

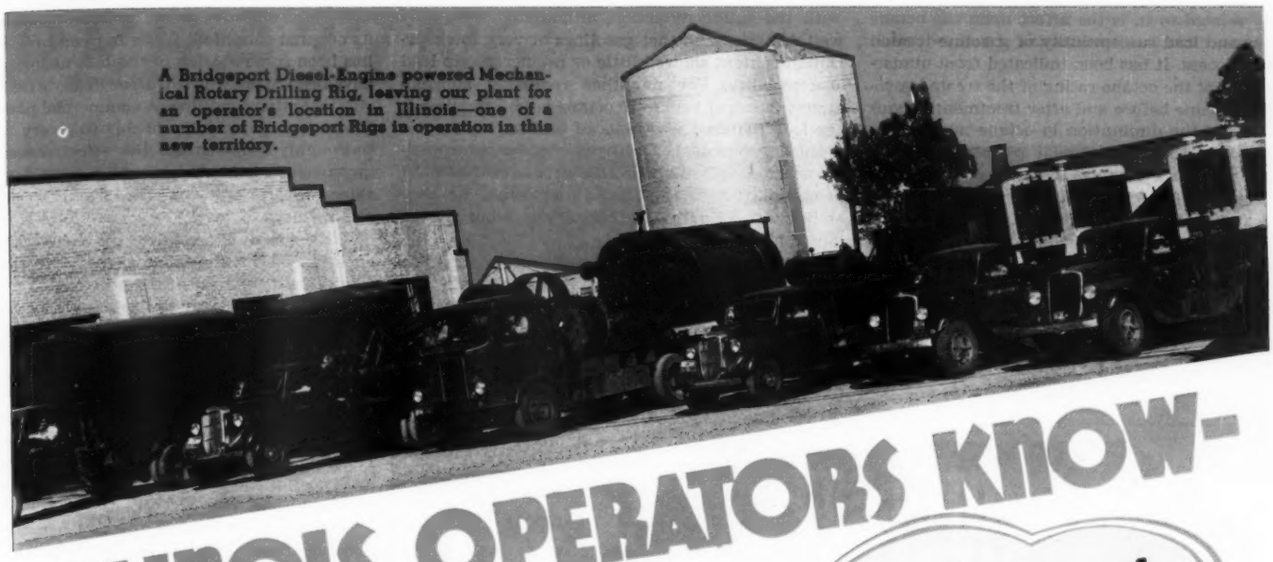
In the matter of color, gasolines may be treated to 30 plus. Upon exposure to three weeks of sunlight, samples of cracked gasoline have retained a color in excess of 21 without the deposition of any gum or the development of haze which usually accompany extended exposure to sunlight.

Odor, as well as color, adds no particular value to gasoline as such, but from a commercial standpoint both color and odor are frequently capitalized. The effectiveness of the process to eliminate certain sulfur compounds from the gasoline results in the production of an exceptionally sweet gasoline, if good odor may be defined as sweet. The odor is more than neutral—it is actually sweet.

Samples of gasoline stored up to a year continue to show negative doctor test. In the matter of gum removal, gasolines after treatment show contents of from 2 to 12 milligrams by the copper dish, but show no gum by the glass dish. Different stocks of course account for the difference in gum content. It has also been found that the induction period varies considerably, according to the type of material treated. Vapor phase gasolines which have been treated show from 6 to 10 hours' induction period but the average Mid-Continent cracked gasolines from the conventional types of cracking processes revealed induction periods of from 15 to as much as 30 hours.

As has been indicated, the sulfur reduction is material, averaging on the order of 50 per cent. The reduction in sulfur has, however, been as little as 15 per cent on some products, while in other cases as much as 80 per cent of the sulfur has been removed. While the nature of the chemical reactions involved, which doubtless account for the differences in results, is not fully known, it has definitely been ascertained that the reduction in total sulfur is equal to the mercaptan sulfur content of the charge, although it is usually more than that. One might hazard the opinion that the sweetening operation involves the elimination of mercaptans rather than conversion to the sulfide sulfur, or, if the conversion does take place, sulfide sulfur is removed from the system. The definite tracing of the chemical reactions is of interest to the chemists and to the process company. My particular present interest is solely in the results and in the operability of the process. It is not necessary to complete this technology now because it is not necessary to utilize the process on the basis of predicted results. The present approach must of course be on the basis of the treatment of quantities of material through pilot plants, where actual results may be obtained and studied, on the basis of which the individual processor can determine the economics involved.

Tied in with the sulfur reduction, and obviously



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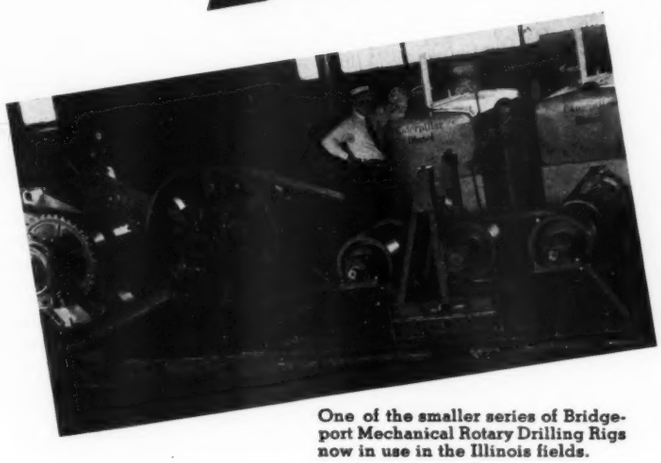

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closely related to it, is the affect upon the octane number and lead susceptibility of gasoline treated by this process. It has been indicated from numerous tests that the octane rating of the treated gasoline is the same before and after treatment. It suffers none of the diminution in octane number experienced in the conventional plumbite or acid treating processes. Samples treated by pilot plants show several octane numbers higher than refinery samples treated by the former methods. The refiner, however, is not as much interested in octane number as he is in lead susceptibility because in any event most of the gasolines manufactured with present processes still need lead to bring them up to commercial standards. The lead susceptibility of the treated gasoline is therefore of the utmost importance. It has been indicated from numerous tests that the increase in lead susceptibility varies with the sulfur reduction, although it is equally well demonstrated that gasolines of very low mercaptan content showed little or no increase in lead susceptibility. For naphthas requiring approximately 3 cc.'s of lead to 70 octane before treatment, the lead required was reduced to 1 cc. It does not require a great deal of arithmetic to show the possible economies involved in the successful treatment of straightrun gasoline having an octane number of between 45 and 50. The savings seem almost incredible.

The pilot plant operation points to a long life for the oxidized zinc. Runs have been made that extended well beyond the probable theoretical life of the chemical if the reactions had been entirely chemical. It has been found in practice that the chemical may be regenerated by turning steam into the bed. The activity of the chemical bed thereupon is as effective as far as is known as it was in its original condition. While in plant practice there has been some erosion of the bed, changes in flow have been made which will, or in any event should, eliminate this condition. A commercial plant which is starting operations probably this very hour will thoroughly demonstrate the effectiveness of the improvements in design which have been made since the first semi-commercial unit was installed at a refinery.

On the basis of the life of the chemicals actually experienced in the pilot plant, many products would justify the use of the process on the basis of cost. Just how cheap the process will ultimately be will depend upon the life of the bed for various stocks when that life is ultimately determined. Necessarily, it will require a considerable period of operation to discover the ultimate life in view of the present favorable experiences with the maintenance of full activity of the chemical bed. The life of the chemical bed will determine the ultimate cost of the process for the several services it gives.

This recital of what the process has done in the pilot plant and what it has done to an extent in a commercial installation suggests many uses for the treatment of special products not discussed herein, where particular inspections on the finished product are desired.

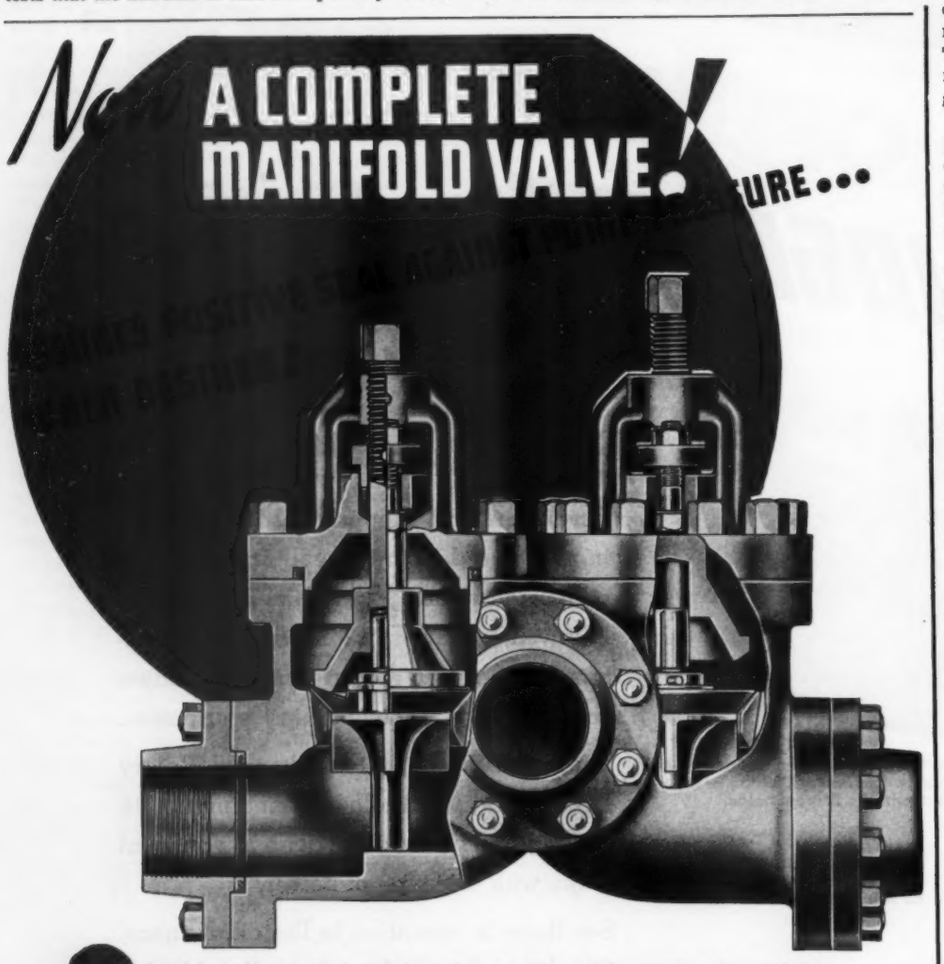
While the owners of the Howard process have been conservative in their exploitation of the inherent possibilities of the process, I have urged upon them the desirability of putting it before this forum. I feel that with the information made available to the technologists in the industry, considerable supplementary work can be done by interested investigators, or applications made by refiners, many of whom would be able to make contributions to the more certain translation of the process into complete and full utilization in the commercial field. The savings inherent in the process are too valuable to hold back its commercial development.

In Table 1 is an inspection of pressure distillate and straightrun gasoline produced from Kansas crude, before and after treatment by the Howard process.

TABLE 1—RESULTS OF TREATING PRESSURE DISTILLATE AND STRAIGHTRUN GASOLINE

Reformed gasoline pressure distillate—	Raw pressure distillate	Gasoline separated by distillation	Gasoline Howard process treated and fractionated
A.P.I. gravity	51.1	51.7	51.7
A.S.T.M. distillation:			
I.B.P.	112	109	104
5 per cent	164	156	156
10	202	190	190
20	249	241	240
30	286	270	272
40	314	294	292
50	332	312	312
60	354	330	338
70	374	347	354
80	390	364	372
90	415	378	392
95	454	390	406
Endpoint	458	395	418
Recovery, per cent	96.0	98 5	97 8
Doctor test	....	Positive	Sweet
Corrosion test	....	....	O.K.
Color	....	Yellow	30+
Octane number	59 0	59 0	59 0
Lead to 70 oct. A.S.T.M., cc.	1 80	1 70	1 80
Sulfur, per cent	0.0214	0.0189	0 011

Light straightrun gasoline—	Original	Howard process treated
A.P.I. gravity	64 8	64 1
A.S.T.M. distillation:		
I.B.P.	98	108
5 per cent	134	144
10	152	161
20	180	183
30	200	202
40		217
50	234	233
60	250	247
70	266	263
80	286	286
90	316	311
95	332	330
Endpoint	352	360
Recovery, per cent	98 0	98 8
Doctor test	....	Negative
Corrosion test	poor	O.K. 6 hrs. at 212° F.
Color	30+	30+
Octane number	50 0	50 2
Lead to 70 octane A.S.T.M., cc.	2 7	1 7



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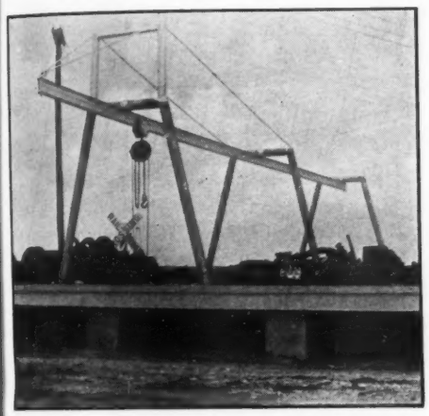
OPERATING IDEAS

Traveling Crane for Dock

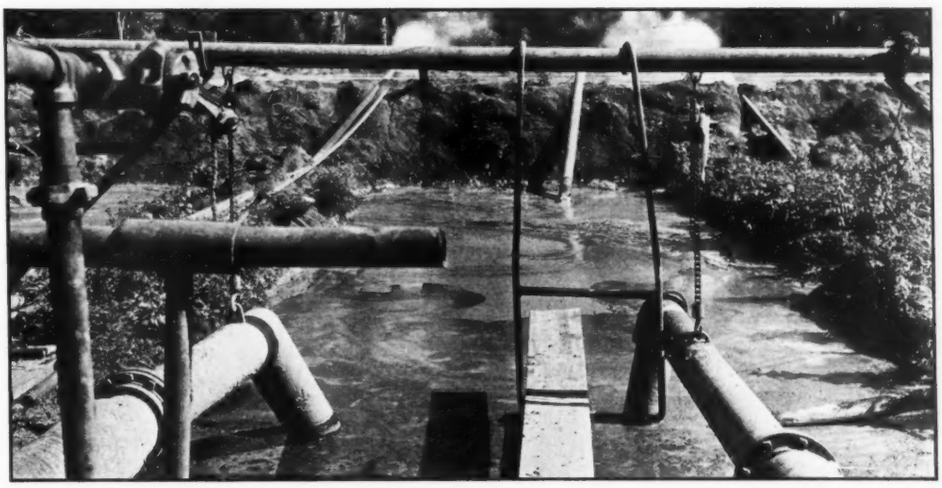
The traveling crane shown in the accompanying photograph was constructed at a very low cost by one oil company at a warehouse dock through use of discarded short lengths of pipe and other scrap materials.



As shown, special bracing is provided for the section of the I-beam extending out from the dock to increase the crane's weight-handling capacity when loading or unloading trucks. A traveling crane such as this has the advantage of increasing the dock space over which material can be distributed.

Pump Operated by Bandwheel

In the Rainbow field of southern Arkansas one operator has adapted a crude-oil pump to operate from the bandwheel of a standard pumping rig, the pump being used to move oil from lease tanks to a refinery 5 miles away. The pump is hooked to the 24-hour pumping rig only when tanks of oil are to be moved.

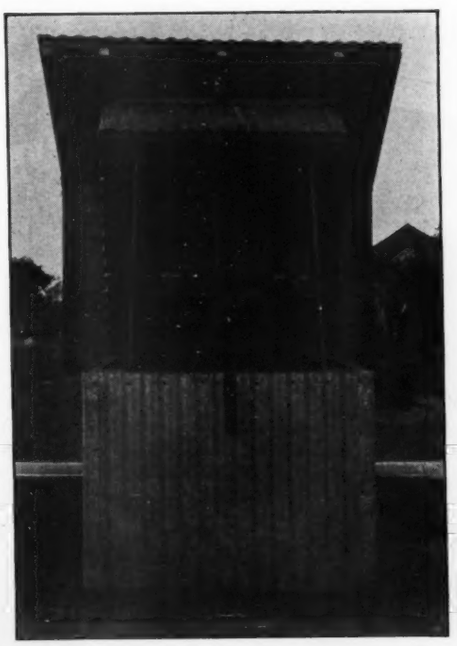


Support for Walkway to Mud Suction Lines

To facilitate raising or lowering the mud pump suction lines, one Gulf Coast operator devised the support shown in the accompanying picture. The suction lines are supported from a pipe suspended across the mud pit. A plank supported by a rack, built of steel rod and hung from the pipe supporting the suction lines, provides a walkway to the device for raising or lowering the intake end of the suction lines. The lines are suspended from the support by means of roller chains, attached to a hook on the suction lines and passing through a ratchet.

All-Weather Meter House

One oil company has constructed meter houses of the type shown in the accompanying photograph to protect its meters installed on pipe lines during periods of stormy weather. The view here shows the house open, but for all ordinary purposes the moveable top is shut down, completely protecting the meters from the weather. A hasp and lock are provided to keep the cover from being blown open by wind and to prevent anyone from tampering with the adjustments of meters.



Protecting Christmas Trees

Fire protection is provided to townsite wells in the Van field of Texas by the arrangement shown in the accompanying photograph. Water pipes are fixed in four directions, and perforated downward, so in case of fires among the dwellings in the townsite area, water can be turned on these steel houses placed over all christmas trees and keep fire from spreading near it.

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5-1/2	17.00	.....	16.97	.304	4.892	18.09	10	7-1/8	6.050	.....	.....	7,000
5-1/2	20.00	.....	19.81	.361	4.778	15.24	10	7-1/8	6.050	.....	.....	8,000
6-5/8	20.00	.....	19.45	.288	6.049	23.00	10	7-5/8	7.390	.....	.....	5,000
6-5/8	24.00	.....	23.55	.352	5.921	18.83	10	7-5/8	7.390	0	7.390	6,000
6-5/8	24.00	24.20	23.55	.352	5.921	18.83	10	7-5/8	7.390	0	7.390	6,000
6-5/8	28.00	28.19	27.64	.417	5.791	15.83	10	7-5/8	7.390	0	7.390	7,000
6-5/8	28.00	28.19	27.64	.417	5.791	15.83	10	7-5/8	7.390	0	7.390	7,000
6-5/8	32.00	32.19	31.67	.475	5.675	13.94	10	7-5/8	7.390	0	7.390	8,000
7	20.00	.....	19.56	.272	6.456	25.74	10	7-5/8	7.656	.....	.....	4,000
7	23.00	.....	22.56	.317	6.366	20.08	10	7-5/8	7.656	0-1/2	7.700	4,000
7	24.00	24.20	23.64	.328	6.344	19.34	10	7-5/8	7.656	0-1/2	7.700	4,000
7	26.00	26.20	25.55	.362	6.276	17.32	10	7-5/8	7.656	0-1/2	7.700	5,000
7	28.00	28.20	27.73	.408	6.184	15.63	10	7-5/8	7.656	0-1/2	7.700	5,000
7	30.00	30.20	29.72	.453	6.094	14.13	10	7-5/8	7.656	0-1/2	7.700	6,000
7	32.00	32.20	31.71	.498	6.004	12.85	10	7-5/8	7.656	0-1/2	7.700	6,000
7	35.00	35.20	34.70	.547	5.906	11.72	10	7-5/8	7.656	0-1/2	7.700	7,000
7	38.00	38.20	37.68	.595	5.810	10.76	10	7-5/8	7.656	0-1/2	7.700	8,000
7-5/8	24.00	24.20	23.55	.300	7.025	25.42	8	8	8.250	0-1/2	8.300	3,000
7-5/8	26.40	26.60	25.92	.328	6.969	23.71	8	8	8.250	0-1/2	8.300	3,000
7-5/8	29.70	29.92	29.16	.375	6.875	21.00	8	8	8.250	0-1/2	8.300	4,000
7-5/8	33.70	33.92	33.06	.430	6.765	18.56	8	8	8.250	0-1/2	8.300	4,000
7-5/8	39.00	39.23	38.15	.500	6.625	16.25	8	8	8.250	0-1/2	8.300	5,000
7-5/8	42.80	43.03	41.85	.550	6.525	14.77	8	8	8.250	0-1/2	8.300	6,000
7-5/8	45.30	45.53	44.29	.595	6.435	13.45	8	8	8.250	0-1/2	8.300	6,000
8-5/8	24.00	24.20	23.55	.264	8.097	32.64	8	8	9.125	0-1/2	9.187	2,000
8-5/8	28.00	28.20	27.49	.304	8.017	28.37	8	8	9.125	0-1/2	9.187	2,000
8-5/8	32.00	32.20	31.40	.352	7.921	24.50	8	8	9.125	0-1/2	9.187	3,000
8-5/8	36.00	36.24	35.31	.400	7.825	21.88	8	8	9.125	0-1/2	9.187	3,000
8-5/8	40.00	40.24	39.23	.450	7.725	19.17	8	8	9.125	0-1/2	9.187	4,000
8-5/8	44.00	44.24	43.16	.500	7.625	17.00	8	8	9.125	0-1/2	9.187	4,000
8-5/8	49.00	49.28	48.07	.557	7.511	15.06	8	8	9.125	0-1/2	9.187	5,000
8-5/8	52.00	52.28	51.00	.597	7.431	13.72	8	8	9.125	0-1/2	9.187	5,000
8-5/8	56.00	56.28	54.93	.642	7.341	12.58	8	8	9.125	0-1/2	9.187	6,000
8-5/8	60.00	60.28	58.85	.688	7.249	11.60	8	8	9.125	0-1/2	9.187	6,000
8-5/8	64.00	64.28	62.77	.736	7.153	10.72	8	8	9.125	0-1/2	9.187	7,000
8-5/8	68.00	68.28	66.68	.784	7.057	9.96	8	8	9.125	0-1/2	9.187	8,000
9-5/8	32.30	32.55	31.70	.312	9.001	30.77	8	8	10.000	0-1/2	10.062	2,000
9-5/8	36.00	36.25	35.32	.352	8.921	27.27	8	8	10.000	0-1/2	10.062	2,000
9-5/8	40.00	40.25	39.25	.395	8.835	24.37	8	8	10.000	0-1/2	10.062	3,000
9-5/8	43.50	43.75	42.70	.435	8.755	22.07	8	8	10.000	0-1/2	10.062	3,000
9-5/8	47.00	47.25	46.14	.472	8.681	20.34	8	8	10.000	0-1/2	10.062	4,000
9-5/8	53.50	53.75	52.53	.545	8.535	17.66	8	8	10.000	0-1/2	10.062	4,000
10-3/4	40.50	40.80	39.67	.350	10.050	30.71	8	8	11.187	0-1/2	11.250	2,000
10-3/4	45.00	45.30	44.07	.400	9.950	26.88	8	8	11.187	0-1/2	11.250	2,000
10-3/4	51.00	51.30	49.90	.450	9.850	23.89	8	8	11.187	0-1/2	11.250	3,000
10-3/4	55.50	55.80	54.41	.495	9.760	21.72	8	8	11.187	0-1/2	11.250	3,000
10-3/4	60.70	61.00	59.60	.545	9.660	19.78	8	8	11.187	0-1/2	11.250	4,000
10-3/4	65.70	66.00	64.56	.595	9.560	18.07	8	8	11.187	0-1/2	11.250	4,000
10-3/4	71.70	72.00	70.59	.650	9.450	16.54	8	8	11.187	0-1/2	11.250	5,000
10-3/4	75.70	76.00	74.55	.685	9.380	15.71	8	8	11.187	0-1/2	11.250	5,000
10-3/4	79.70	80.00	78.52	.720	9.310	15.00	8	8	11.187	0-1/2	11.250	5,000
10-3/4	85.30	85.60	84.00	.772	9.206	14.00	8	8	11.187	0-1/2	11.250	6,000
10-3/4	91.00	91.30	89.60	.825	9.100	13.09	8	8	11.187	0-1/2	11.250	6,000
10-3/4	96.70	97.00	95.25	.875	9.000	12.29	8	8	11.187	0-1/2	11.250	7,000
10-3/4	102.40	102.70	100.90	.927	8.896	11.57	8	8	11.187	0-1/2	11.250	8,000
11-3/4	47.00	47.35	46.20	.333	11.084	35.29	8	8	12.250	0-1/2	12.312	2,000
11-3/4	54.00	54.35	53.00	.399	10.952	29.46	8	8	12.250	0-1/2	12.312	2,000
11-3/4	60.00	60.35	58.93	.456	10.838	25.00	8	8	12.250	0-1/2	12.312	3,000
11-3/4	65.00	65.35	63.85	.504	10.742	22.00	8	8	12.250	0-1/2	12.312	3,000
11-3/4	71.80	72.15	70.59	.560	10.630	19.48	8	8	12.250	0-1/2	12.312	4,000
11-3/4	75.80	76.15	74.51	.595	10.560	18.07	8	8	12.250	0-1/2	12.312	4,000
11-3/4	81.40	81.75	80.00	.640	10.470	16.48	8	8	12.250	0-1/2	12.312	5,000
11-3/4	85.40	85.75	83.93	.672	10.406	15.49	8	8	12.250	0-1/2	12.312	5,000
11-3/4	91.00	91.35	89.40	.720	10.310	14.31	8	8	12.250	0-1/2	12.312	6,000
11-3/4	96.80	97.15	95.00	.770	10.210	13.25	8	8	12.250	0-1/2	12.312	6,000
11-3/4	102.60	102.95	100.70	.820	10.110	12.32	8	8	12.250	0-1/2	12.312	7,000
11-3/4	108.40	108.75	106.40	.870	10.010	11.49	8	8	12.250	0-1/2	12.312	8,000

Supplies of these tables available on request.

REPUBLIC HEAT-TREATED CASING

Length of Strings for Collapse (Salt Water) and Tension
Bursting Pressures
Minimum Physicals

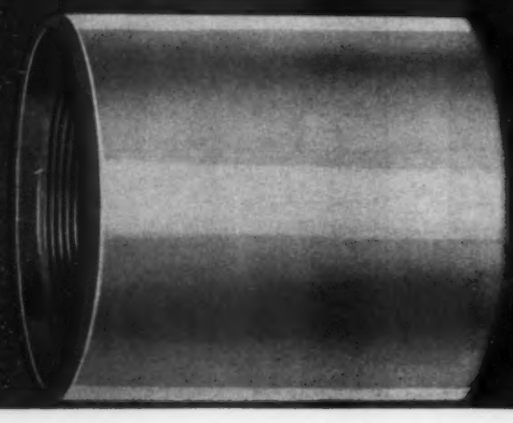
Size O. D. In.	Weight Per Foot: Short Thread and Coupling Lbs.	Weight Per Foot: Long Thread and Coupling Lbs.	"SETTING DEPTH": *Collapse S.F. 1-1/2 Ft.	"SETTING DEPTH": *Collapse S.F. 2 Ft.	"SETTING DEPTH": Short Couplings: Tension S.F. 1-1/2 Ft.	"SETTING DEPTH": Short Couplings: Tension S.F. 2 Ft.	"SETTING DEPTH": Long Couplings: Tension S.F. 1-1/2 Ft.	"SETTING DEPTH": Long Couplings: Tension S.F. 2 Ft.	Bursting Pressure Minimum Lbs. Per Sq. In.	Longitudinal Tensile Minimum Lbs. Per Sq. In.: Yield	Longitudinal Tensile Minimum Lbs. Per Sq. In.: Ult.	Transverse Compressive Yield Minimum Lbs. Per Sq. In.
5-1/2	17.00	.....	8720	7260	18420	9220	.....	.....	10360	75000	95000	80000
5-1/2	20.00	.....	10640	8860	19430	9720	.....	.....	12670	75000	95000	80000
6-5/8	20.00	.....	8040	6700	11720	5860	.....	.....	8980	75000	95000	80000
6-5/8	24.00	24.20	9840	8200	11720	5860	14000	7000	11160	75000	95000	80000
6-5/8	28.00	28.19	11640	9700	11720	5860	14000	7000	13340	75000	95000	80000
6-5/8	32.00	32.19	13440	11200	11720	5860	14000	7000	15520	75000	95000	80000
7	20.00	.....	7000	5840	11720	5860	.....	.....	8160	75000	95000	80000
7	23.00	.....	8800	7340	11720	5860	14000	7000	9980	75000	95000	80000
7	24.00	24.20	9400	7840	11720	5860	14000	7000	10640	75000	95000	80000
7	26.00	26.20	10600	8840	11720	5860	14000	7000	11960	75000	95000	80000
7	28.00	28.20	11800	9840	11720	5860	14000	7000	13280	75000	95000	80000
7	30.00	30.20	13000	10840	11720	5860	14000	7000	14600	75000	95000	80000
7	32.00	32.20	14200	11840	11720	5860	14000	7000	15920	75000	95000	80000
7	35.00	35.20	15800	13180	11720	5860	14000	7000	17900	75000	95000	80000
7	38.00	38.20	17400	14520	11720	5860	14000	7000	19880	75000	95000	80000
7-5/8	24.00	24.20	8200	6840	11720	5860	14000	7000	9280	75000	95000	80000
7-5/8	26.40	26.60	9200	7680	11720	5860	14000	7000	10400	75000	95000	80000
7-5/8	29.70	29.92	10600	8840	11720	5860	14000	7000	11960	75000	95000	80000
7-5/8	33.70	33.92	12400	10340	11720	5860	14000	7000	13980	75000	95000	80000
7-5/8	39.00	39.23	14800	12340	11720	5860	14000	7000	16680	75000	95000	80000
7-5/8	42.80	43.03	16600	13840	11720	5860	14000	7000	18700	75000	95000	80000
7-5/8	45.30	45.53	18000	15000	11720	5860	14000	7000	20280	75000	95000	80000
8-5/8	24.00	24.20	7600	6340	11720	5860	14000	7000	8600	75000	95000	80000
8-5/8	28.00	28.20	9400	7840	11720	5860	14000	7000	10640	75000	95000	80000
8-5/8	32.00	32.20	11200	9340	11720	5860	14000	7000	12680	75000	95000	80000
8-5/8	36.00	36.24	13000	10840	11720	5860	14000	7000	14720	75000	95000	80000
8-5/8	40.00	40.24	14800	12340	11720	5860	14000	7000	16760	75000	95000	80000
8-5/8	44.00	44.24	16600	13840	11720	5860	14000	7000	18800	75000	95000	80000
8-5/8	49.00	49.28	18800	15680	11720	5860	14000	7000	21320	75000	95000	80000
8-5/8	52.00	52.28	20200	16840	11720	5860	14000	7000	22920	75000	95000	80000
8-5/8	56.00	56.28	22000	18340	11720	5860	14000	7000	24960	75000	95000	80000
8-5/8	60.00	60.28	23800	19840	11720	5860	14000	7000	27000	75000	95000	80000
8-5/8	64.00	64.28	25600	21340	11720	5860	14000	7000	29040	75000	95000	80000
8-5/8	68.00	68.28	27400	22840	11720	5860	14000	7000	31080	75000	95000	80000
9-5/8	32.30	32.55	10000	8340	11720	5860	14000	7000	11360	75000	95000	80000
9-5/8	36.00	36.25	11800	9840	11720	5860	14000	7000	13400	75000	95000	80000
9-5/8	40.00	40.25	13600	11340	11720	5860	14000	7000	15440	75000	95000	80000
9-5/8	43.50	43.75	15000	12500	11720	5860	14000	7000	17020	75000	95000	80000
9-5/8	47.00	47.25	16400	13680	11720	5860	14000	7000	18600	75000	95000	80000
9-5/8	53.50	53.75	19200	16000	11720	5860	14000	7000	21760	75000	95000	80000
10-3/4	40.50	40.80	9200	7680	11720	5860	14000	7000	10440	75000	95000	80000
10-3/4	45.00	45.30	10800	9000	11720	5860	14000	7000	12240	75000	95000	80000
10-3/4	51.00	51.30	12800	10680	11720	5860	14000	7000	14520	75000	95000	80000
10-3/4	55.50	55.80	14400	12000	11720	5860	14000	7000	16320	75000	95000	80000
10-3/4	60.70	61.00	16200	13500	11720	5860	14000	7000	18360	75000	95000	80000
10-3/4	65.70	66.00	17800	14840	11720	5860	14000	7000	20160	75000	95000	80000
10-3/4	71.70	72.00	19800	16500	11720	5860	14000	7000	22440	75000	95000	80000
10-3/4	75.70	76.00	21000	17500	11720	5860	14000	7000	23800	75000	95000	80000
10-3/4	79.70	80.00	22200	18500	11720	5860	14000	7000	25160	75000	95000	80000
10-3/4	85.30	85.60	23800	19840	11720	5860	14000	7000	27000	75000	95000	80000
10-3/4	91.00	91.30	25400	21180	11720	5860	14000	7000	28840	75000	95000	80000
10-3/4	96.70	97.00	27000	22500	11720	5860	14000	7000	30680	75000	95000	80000
10-3/4	102.40	102.70	28600	23840	11720	5860	14000	7000	32520	75000	95000	80000
11-3/4	47.00	47.35	9800	8160	11720	5860	14000	7000	11120	75000	95000	80000
11-3/4	54.00	54.35	11800	9840	11720	5860	14000	7000	13400	75000	95000	80000
11-3/4	60.00	60.35	13600	11340	11720	5860	14000	7000	15440	75000	95000	80000
11-3/4	65.00	65.35	15000	12500	11720	5860	14000	7000	17020	75000	95000	80000
11-3/4	71.80	72.15	16600	13840	11720	5860	14000	7000	18840	75000	95000	80000
11-3/4	75.80	76.15	17600	14680	11720	5860	14000	7000	19960	75000	95000	80000
11-3/4	81.40	81.75	18800	15680	11720	5860	14000	7000	21320	75000	95000	80000
11-3/4	85.40	85.75	19800	16500	11720	5860	14000	7000	22440	75000	95000	80000
11-3/4	91.00	91.35	21200	17680	11720	5860	14000	7000	24040	75000	95000	80000
11-3/4	96.80	97.15	22600	18840	11720	5860	14000	7000	25640	75000	95000	80000
11-3/4	102.60	102.95	24000	20000	11720	5860	14000	7000	27240	75000	95000	80000
11-3/4	108.40	108.75	25400	21180	11720	5860	14000	7000	28840	75000	95000	80000

REPUBLIC

Heat Treated

CASING

REPUBLIC STEEL CORPORATION



REPUBLIC

AND HERE THEY ARE

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. . . AND LIGHTER WEIGHT

● You asked for a casing that could be set SAFELY at greater depths. You asked for a casing that would be lighter in weight. Here it is:—Republic Alloy Steel *Heat-Treated* Casing.

Because, as the name implies, it is made of special alloy steel and *heat-treated,* this new casing possesses unequaled high compression yield strength with high tensile strength and ductility. It provides greatly increased resistance to collapse without increase of wall thickness. It minimizes the hazard of casing failure in deep hole drilling.

Republic Steel
Corporation

REPUBLIC STEEL

GENERAL OFFICES . . . CLEVELAND, OHIO

HEAT-TREATED CASING

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Low Temperature Fractionation of Gases, Vapors and Liquids

By F. N. LAIRD
The Texas Co.*

Since the inception of the natural gasoline industry, many different procedures for the testing of natural gas and gasoline have been developed, used for a while, and then discarded in favor of newer procedures. These newer procedures either produced the same results at a lower cost, or in a simpler manner, or expressed the results in different units which enabled the plant engineer to better visualize what his equipment was doing.

C.N.G.A. — Presented at October meeting of California Natural Gasoline Association.

However, with the exception of the complicated procedure for the low temperature analysis of gas and gasoline, none of the simpler test methods have ever given direct results in terms of the ultimate composition of the material examined. This basic shortcoming of all field and plant test methods has made the interpretation of such empirical results largely a matter of individual opinion, or predicated upon individual conceptions of how the test method should interpret the operation of equipment. Standardization has done much to reduce indirect testing methods to orderly and well balanced procedures whereby the empirical results can be reproduced by different operators.

The direct analysis of natural gas and gasoline by low temperature fractional analysis, using liquid air, has been practiced for over 10 years. The direct results obtainable have been of value to research and development and general plant engineering. On the other hand, low temperature analysis has always possessed the limiting factors of length of time required to complete a test; fragility; lack of portability; high initial cost; and high cost of operation. It has therefore been necessary to confine the appartus to fixed locations, such as a field laboratory, and bring the samples to it. In bringing samples to the instrument another problem is frequently encountered in the form of difficulties in obtaining and transferring representative samples. These difficulties can be overcome, but involve a complicated and costly technique.

It is apparent then that the utility of the complicated low temperature analysis procedure has been largely limited to the analysis of occasional samples, or the analysis of samples for research, development or survey work. In spite of its usefulness the method has never been applied to the broad field of general plant and field testing, now covered by the charcoal test.

Three years ago the idea occurred to the writer that if low temperature analysis could be conducted in glass, then why not in metal? If the method could be made to work in metal, then why could it not be simplified through the elimination of many working parts necessary to the glass form? And further, could some other cooling agent be used which would replace the costly liquid air? If such an apparatus could be devised, could it be made to operate with an accuracy equal to the standard low temperature analysis procedure, and could it be small, lightweight and constructed with a ruggedness which would give portability?

A search revealed the possibility of designing an apparatus which would partially condense a gas sample, fractionate the portion lighter than isobutane as a lump, and retail all of the isobutane and heavier fractions. The possibility of determining propane seemed very promising also.

W. J. Murray has developed a formula for calculating the amount of any hydrocarbon which will condense under any pressure and temperature. It is:

$$C_1 = \frac{LC}{\frac{P_c}{P}\,100 + L\left(1 - \frac{P_c}{P}\right)}$$

Where: C_1 = mols of component in liquid after condensation.
C = mols of component in gas.
P_c = absolute vapor pressure of pure component at temperature of condensation.
P = total pressure on system.
L = total mols of liquid after condensation.

With this formula a series of calculations were made to find how much of each component will condense at —110° F. (sublimation temperature of carbon dioxide), and pressures from 0 to 32 pounds, absolute. These calculations were carried out for propane, isobutane, butane, isopentane and pentane. Figure 2 shows these data plotted when 20 mol per cent of the gas condenses at —110° F.

From Figure 2 we can see that all of the isobutane and heavier is not condensed. But the curve shows clearly just how much is condensed. If the

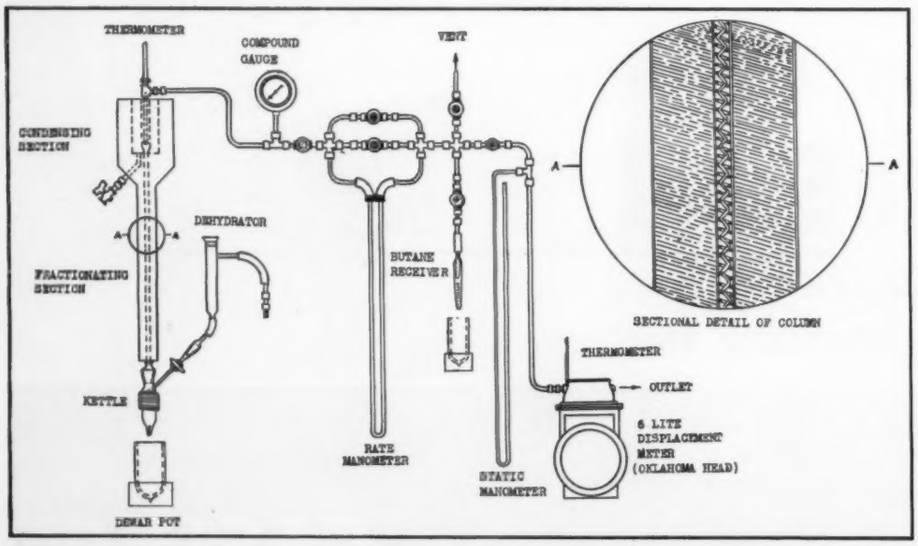

Fig. 1—Illustrative diagram of the low-temperature fractionation unit

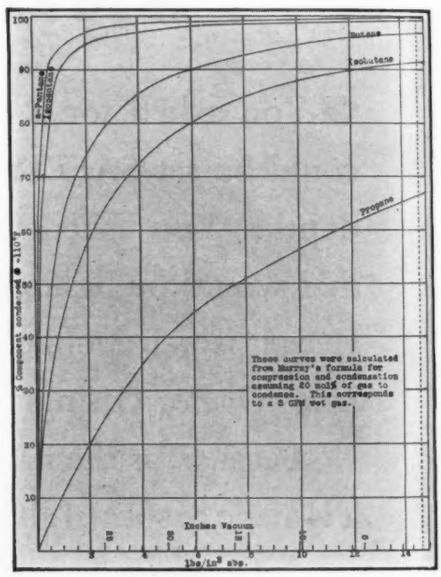

Fig. 2—Condensation of propane, isobutane, butane, isopentane and pentate at —110° F.

*Presented under the author's title, "A Rapid Method for the Low Temperature Fractionation of Gases, Vapors and Liquids."

condensation took place at atmospheric pressure, Figure 2 tells us that 66.5 per cent of the propane will condense; 91.5 per cent of the isobutane; 97.5 per cent of the n-butane; 99.2 per cent of the isopentane; and 99.5 per cent of the n-pentane. All that is necessary then to obtain accurate results for the fractionation data obtained is to correct the amounts of each component found from the curves of Figures 3, 4 and 5.

The unit designed to accomplish the condensation and fractionation of the gas is primarily a reproduction of standard fractionation apparatus in metal (Figure 1). All glass parts are eliminated except the kettle and butane condensation bulb. The final apparatus consists essentially of a gas dehydrating unit, graduated condensing and distilling kettle, fractionating column, condenser section, pressure gauge, rate contral valve and rate manometer, butane condensation bulb, displacement meter capable of measuring under vacuum, and a vacuum pump. All of these items are assembled of materials lending ready portability to the completed unit. The dimensions of the various parts, in relation to one another, are very important if accurate results are to be obtained.

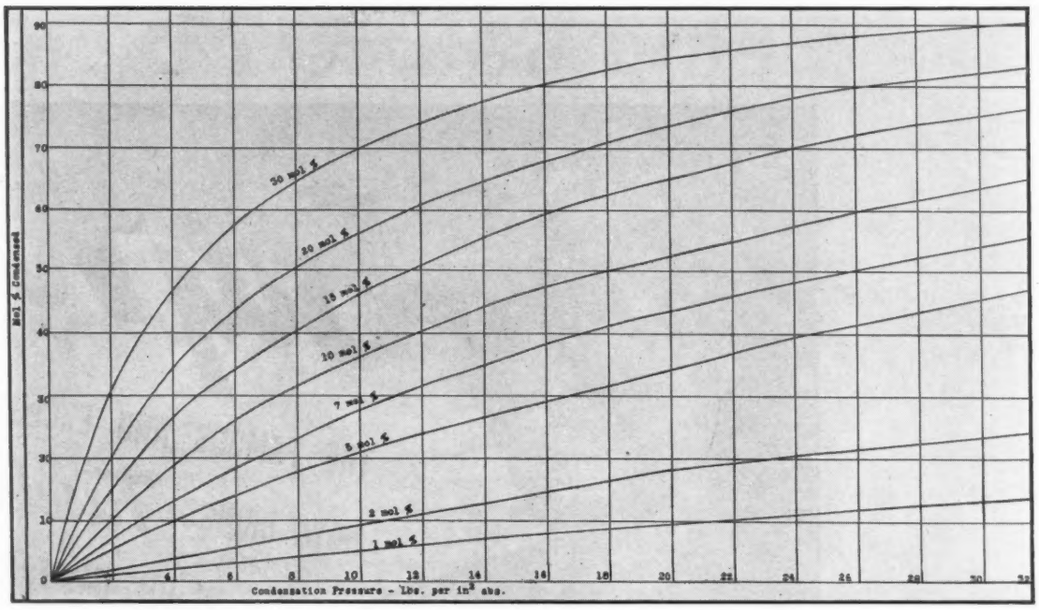

Fig. 3—Mol per cent propane condensed at varying pressures and total mol per cent condensed

The following dimensions are the most suitable for the column when using an original condensed sample of between 1 and 8 milliliters for field testing and plant testing work. The fractionating section consists of an aluminum tube three-eighths inch O.D. by three-sixteenths inch I.D. and 26½ inches long. The condensing section is seven-sixteenths inch O.D. by 11/32-inch I.D. and 5¼ inches long. The connection between the two tubes is a machined aluminum reducer which does not allow any liquid to be held up in the condenser section. The thermometer used to read the distillation temperature is of the ordinary cloud and pour-point type, reading —70 to plus 70° F. The bulb is placed one-half inch above the junction of the three-eighths inch and seven-sixteenths inch tubing.

The fractionating section is housed in the center of a 2-inch diameter tube of light weight aluminum tubing and is insulated with fairly tightly packed kapok in the intervening space. The condenser is made of 2-inch diameter aluminum tubing inside 6-inch diameter aluminum tubing and is insulated with kapok. The condenser section carries a drain cock which facilitates changing the bath liquid.

A shorter column will give relatively poorer fractionation, while a longer one will proportionately lenghten the distillation time. The same is true for the condenser section. The use of aluminum tubing for the fractionating and condensing sections gives much better results than glass tubing because the heat transfer is faster and smoother. The breaks are therefore more distinct and uniform. By placing the thermometer as indicated above, the dead space in the condenser is reduced to a minimum and the accuracy of the analysis thereby increased. To further reduce the dead space, one-eighth-inch O.D. copper tubing is used to connect the column to the rate control valve and pressure gauge.

The fractionating column is packed with a double spiral of No. 22 gauge nichrome wire. The outside spiral is 8 turns to the inch and fits snugly against the three-eighths inch aluminum tubing, while the inside spiral is wound in an opposite direction 4 turns to the inch and fits loosely inside the outer spiral.

The kettle used varies in size with different samples, it is graduated in 0.1 milliliter up to 15 milliliters. The gas enters the kettle through a coil of 5 millimeters O.D. pyrex tubing wound about the main body of the kettle and entering it at about the 7 milliliters graduation. The coil has not less than 7 turns of 2-inch diameter.

TABLE 1—RESULTS OBTAINED BY FIELD TESTERS

Operator—	A	B	C	D	A
ic_4 plus	4.366	4.257	4.116	4.261	4.310
nc_4 plus	3.630	3.533	3.463	3.511	3.593
ic_4 plus	1.911	1.962	2.092	1.947	1.945

All valves used are one-eighth inch needle valves and eliminate the use of glass stopcocks quite satisfactorily. The rate control manometer has two orifices and a valve so arranged that they may operate separately or together. This permits a large differential for slow distillation rates and also for rapid sample introduction rates at low differential by merely switching orifices.

The butane receiver is an ordinary 15 milliliter centrifuge tube fitted up in a manner similar to a conventional condensation bulb.

The operation of the unit is quite similar to that of the standard glass column. Of course the column itself is not visible and so the glass column operator has some trouble (purely psychological) but after several runs gets along quite nicely. The average field tester unused to handling the standard glass column, frequently acquires skill faster in manipulating the modified metal column than experienced laboratory men who have worked with only glass columns.

The results shown in Table 1 were obtained by field testers after witnessing one run by an experienced operator; and illustrate the reproducibility of results to be expected. Note how operator A (the experienced operator) checked himself.

How do the results obtained by modified composition analysis compare with those obtained by standard low temperature fractionation? After the unit was completed along the lines described above, an exhaustive series of analyses were made on samples taken simultaneously, first with the

(Continued on Page 62)

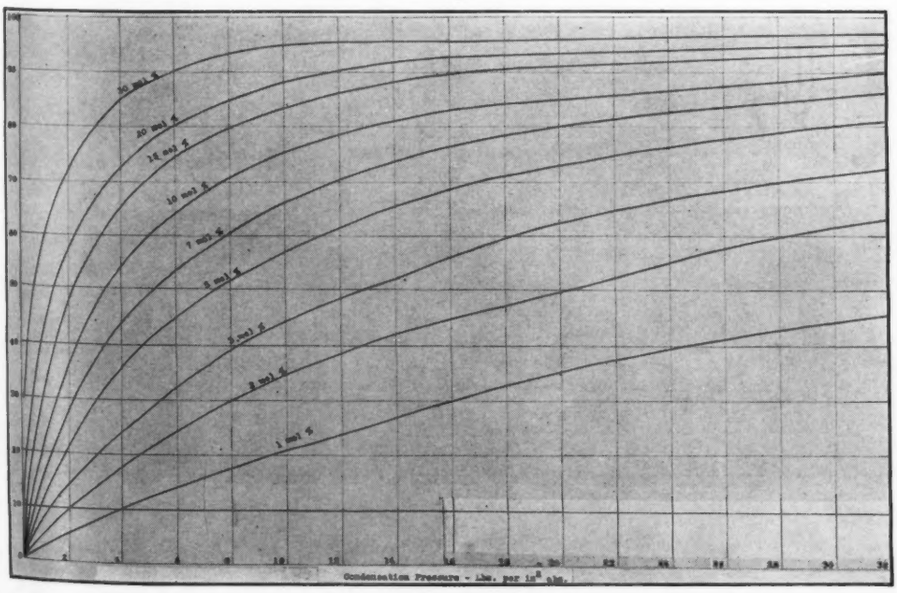

Fig. 4—Mol per cent isobutane condensed at varying pressures and total mol per cent

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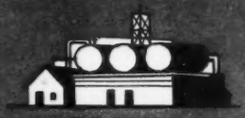
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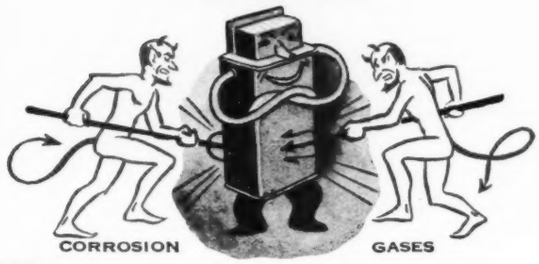

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modified composition analysis unit and then by standard low temperature fractionation according to C.N.G.A. Bulletin TS-321.

When this comparison was first begun the modified composition analyses were consistently higher in isopentane-plus than the standard analyses. In order to check this difference all samples were taken directly in a C.N.G.A. gas kettle at the sample source, transported to the laboratory in liquid air and analyzed by the conventional C.N.G.A. method using the method described by Robinson and Laird[1] for determining the isopentane-plus fraction. After these precautions were taken the results checked well.

Figure 6 shows how closely the modified composition analysis column results check those obtained by the standard C.N.G.A. apparatus. Other curves also show that modified composition analysis will work on all gases found in the Los Angeles Basin, from the leanest to the richest, no matter what the composition. There is also every reason to expect that the duplicability will hold for other districts as well.

At this point it is interesting to note the application of the apparatus to a gas which can give confusing results by the charcoal test. The composition follows:

Air	0.11
Carbon dioxide	0.30
Methane	89.40
Ethane	1.06
Propane	1.67
Butanes	2.40
Isopentane	5.06

From the analysis it is seen that the methane percentage is high, ethane very low, propane almost twice as high as ethane, butanes higher than propane and isopentane-plus much higher than butanes. According to a theory of temperature rises in a charcoal tube, this would be a hard gas to run, because the propane would saturate the tube ahead of the ethane, the butanes ahead of propane, and the fourth rise would mean nothing since butane would be lost before the fourth rise. In actual practice with this type of gas, it is hard to tell where the fourth rise actually occurs, because it seems to come almost on top of the third (Figure 7). Modified composition analysis runs higher than the 30-pound-32-degree charcoal test on this gas which would indicate that some butanes are lost in saturating the tube to an estimated fourth rise. The field tester has no way of knowing this. With modified composition analysis it makes no difference what the composition of the gas might be, since no set amount of gas is used.

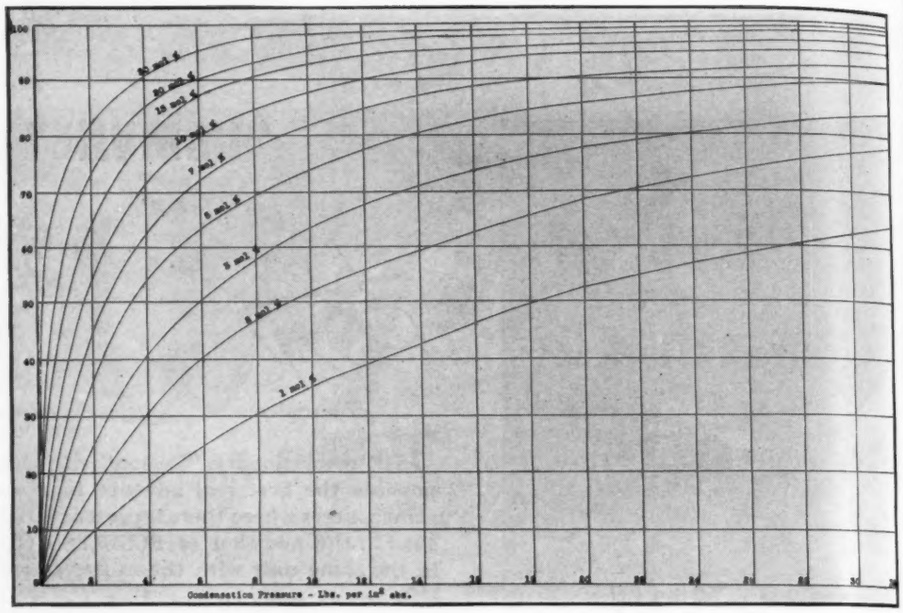


Fig. 5—Mol per cent N-butane condensed at varying pressures and total mol per cent

For plant work the unit works well on all gases, vapors and liquids. One unit can survey a complete plant in from 8 to 24 hours. The results are comparable to composition analysis and obtained much quicker and cheaper. Comparative results on plant samples are shown in Table 2.

The problem of taking, transporting and transferring samples is solved by taking the sample directly into the apparatus. The only contact made by the sample between the sample source and the column is its passage through a drier between the line and the apparatus. Flexible metal tubing is used for a sample introduction line, in order to get away from the absorption of hydrocarbons by the rubber in ordinary tubing. Where flexible connections are necessary in the apparatus itself Duprene tubing is used.

What does it cost to build a modified composition analysis apparatus?; how does the time required for an analysis with it compare with standard low temperature analysis?, and what is the cost, per analysis, in comparison to standard low temperature analysis?

A complete modified composition analysis unit can be assembled for between $100 and $200. The price depending on how fancy and complete the unit is to be built. This price is a rough estimate based on our construction of one unit for our use.

An analysis of the time required to complete an analysis with modified composition analysis as compared with standard composition analysis shows an average of one and one-half to three hours for MCA against 6 to 24 hours for CA. The average modified composition analysis costs about 5 to 10 cents for materials against $3.50 for standard composition analysis.

In conclusion it is well to emphasize that this apparatus is not presented as a cure-all for plant and field use. It has its limitations. But it is believed that careful investigation will reveal it to be an instrument which is cheap to build; possesses a ruggedness and portability wholly satisfactory for rough field use; gives results in a much shorter time, and more economically, than the present standard low temperature fractionation method; gives results which agree to within 1 per cent with those obtainable by standard low temperature fractionation; and finally introduces a complete instrument for the direct analysis of gases, vapors and

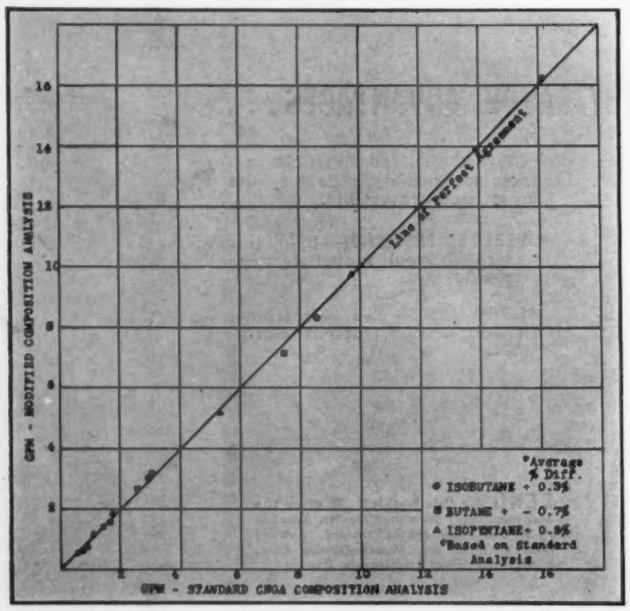


Fig. 6—Comparison of modified and standard composition analyses—six typical gases produced in Santa Fe Springs, Calif.

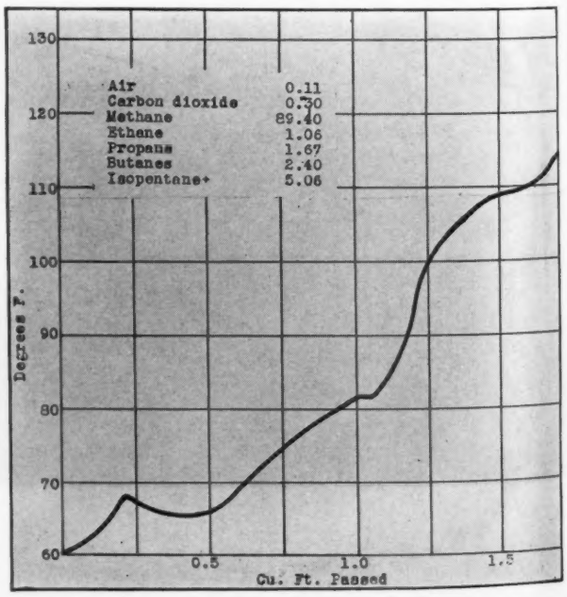


Fig. 7—Results of test using the low-temperature apparatus

[1]C.N.G.A. proceedings, October, 1936.

liquids which can be readily handled by men unskilled in complicated laboratory procedures.

The writer wishes to acknowledge the work of C. F. Braun & Co. in the construction of the apparatus, and the suggestion and encouragement given by the faculty of the University of Southern California.

TABLE 2—COMPARATIVE RESULTS OBTAINED

A—Rectifier Vent Vapors

	MCA (g.p.m.)	CA (g.p.m.)
Isobutane plus	8.442	8 323
n-Butane plus	2.477	2 281
Isopentane plus	Trace	0 037

This type of sample is most difficult to analyze and takes from 20 to 36 hours on a C.N.G.A. standard column. With the modified column it required but three hours and 3 to 4 pounds of dry ice.

B—Finished Product

	MCA (per cent)	CA (per cent)
Isobutane	2 39	2 24
n-Butane	24 08	25 25
Isopentane plus	73.53	72 51

This sample takes about two and one-half hours by MCA and six hours by CA.

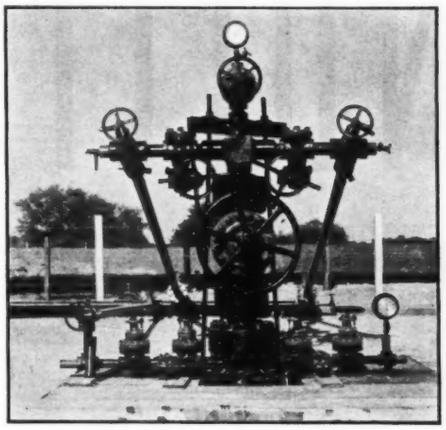
C—Dry Gas

	MCA (g.p.m.)	CA (g.p.m.)
Isobutane plus	0 236	0 248
Butane plus	0 098	0 091
Isopentane plus	0 019	0 016

This sample takes about three and one-half hours by MCA and 24 hours by CA.

Well Hook-up Used in the Ten Section Field of California

Shell Oil Co.'s 8,000-foot wells in the Ten Section field of the San Joaquin Valley, California, are equipped with surface connections as shown in the accompanying photograph. Derricks are removed for use elsewhere after completion of the wells,



and a fence is built around the well-head connections. Long flowing life is expected during which no derricks will be required. At present the wells are allowed to produce about 600 bbls. per day. Gas is conserved with great care. It is first utilized in bringing oil to the surface, and the minimum gas-oil ratio is approached with present rates of flow.

The field's discovery well has been deepened and the upper gaseous zone cased off to conserve gas. After gasoline vapor has been removed at the absorption plant, the dry gas is used for drilling rigs, which require about 4,000,000 feet per day.

Core Studies Being Made by Illinois Geological Survey

The Illinois State Geological Survey has announced that in furtherance of its important studies of oil structures of the Illinois Basin, the Survey wishes to examine every core taken from the various wells being drilled in the basin. Efforts are being made to make arrangements for storage of all available cores. In view of the value of these services to the industry, operators should notify the Survey at once whenever cores are available for study or filing.

The Survey hopes arrangements can be made in the near future to display several complete cores at the Survey and to call in the various geologists now working the Illinois oil field to discuss correlations and stratigraphic conditions thus far revealed. It welcomes suggestions for making such a conference most effective and will appreciate operators' cooperation in making cores available. This work is a part of the Survey's program of investigations for which no charge is made.

Officers of Society Announced

The American Chemical Society has announced the election of 65 chemists to administrative and editorial posts in the society, which now has more than 20,000 members. Officers of the division of petroleum chemistry are: Chairman, Jacques Cyrus Morrell of the Universal Oil Products Co., Chicago; vice chairman, Per K. Frolich of the Standard Oil Development Co., Elizabeth, N. J.; secretary, Cary R. Wagner of the Pure Oil Co., Chicago; executive committee, Frank W. Hall of the Texas Co., New York City; J. K. Roberts of the Standard Oil Co. (Indiana), Whiting, Ind.

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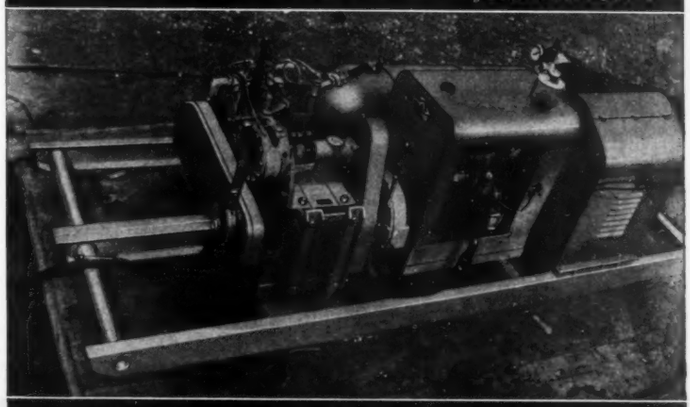

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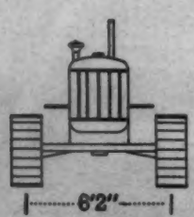

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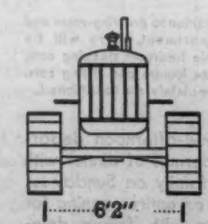

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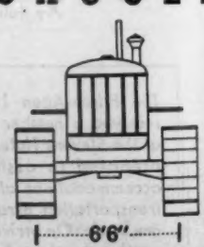

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PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Heaving Shale

We are quite anxious to have any information you can furnish us on heaving shale drilling operations. We are desirous of getting a good description of the operations, the difficulties encountered, equipment used, special methods and so forth. Any help you can be to us will be greatly appreciated.—A. H. C.

The question you ask in your letter is somewhat involved and it is very difficult to either give you references to the particular subject of heaving shales or to answer in any detail in a letter.

We have published numerous articles from time to time about drilling conditions in Gulf Coast fields but it would be necessary to have some first-hand knowledge of the general subject before you could make much out of them. We will therefore give you a resume of this subject and hope it will serve your purpose. We also enclose bibliography on "Drilling Muds," prepared by the Technical Department of the Tulsa Public Library.

The holes are drilled with rotary equipment and the Gulf Coast formations are composed of sediments of various characteristics and thicknesses. The so-called "heaving shales" are usually found at depths below 6,000 feet.

It is now generally agreed these shales, originally laid down in horizontal beds, have been tilted. These sediments have a low bearing value, that is, the material will not withstand the pressures exerted by the overlying sediments. When in a horizontal position and undisturbed they are consolidated, but when they have been tilted out of the horizontal position and have assumed varying degrees of verticality their bearing values are lowered appreciably.

Under normal conditions these shales are relatively dry but when the drill penetrates these formations and water from the drilling mud is squeezed out the shales are wetted and then become very unstable. As the hole has provided an area of low pressure the unsupported edges of the shale forming the walls of the drilled hole tend to slip into the hole and this movement continues until equilibrium is again established. Such a movement may be very sudden and the material will so fill the hole as to seize the drill stem and prevent withdrawal.

Modern practice in drilling through heaving shale sections contemplates the use of a mud of about 12 pounds per gallon in weight. This weight is not enough in many instances to counterbalance the forces exerted by the shale movement so additional pressure at the bottom of the hole is obtained by applying pump pressure to the mud column.

The mud used may be made from salt water clay and zinc chloride and it has been found that mud of this type will not give up its water under high pressures and in this way the wetting of the shales is prevented. It has also been found that mud of this character will remove the cuttings from the hole quickly and discharge them at the surface. In other words it has all the properties desired for a drilling mud with the particular advantage of retaining its water in the mud mixture.

After the shale section has been penetrated it is the usual custom to set a string of casing through it and then proceed with the drilling of the balance of the hole in the usual manner.

There are other means of fighting heaving shale but in general the idea is to prevent the mixing water in the mud fluid from escaping into the shale section in the hole but at the same time hold sufficient pressure against the face of the shale to prevent it from caving.

Devonian Production

We are interested in the development of a structure in Alberta, Canada, laid down during Devonian time, and in view of the fact this is the first Devonian test made in this province, I would appreciate any information you might give us regarding production now developed and being developed in various parts of the United States in formations of that age.—A. M. McD.

In reply to your air mail letter asking about Devonian production in the United States we give you the following regions in which Devonian production has been found.

Appalachian, Kentucky, Ohio, Indiana, Michigan, Oklahoma, Ontario, western Canada and possibly in Bolivia and Argentina in South America. Devonian production has not been recorded in the eastern hemisphere.

This does not of necessity cover all regions in which Devonian production has been found but it should answer your main question.

The area in western Canada to which reference is made is the Devonian limestone below the so-called "tar sands" in northern Alberta. This occurrence of oil is reported by R. G. McConnell in Canadian Geological Survey report, Vol. 4D, pp. 1-163, 1889, and a later report Vol. 5D, pp. 1-67, 1891.

Time Required to Empty Tank

I desire to obtain a hydraulic formula, or formulas, for determining the time necessary to empty an oil tank (full, one-half or any part full), under the following conditions: Tank is 16 feet high, 500 bbls. capacity, discharge connection 2-inch diameter and placed 12 inches up from bottom of tank.—J. B. E.

The formula for estimating time required to empty a tank of any given size or diameter of discharge opening is:

$$t = \frac{2A \times \sqrt{h} - \sqrt{h_2}}{Ca\sqrt{2g}}$$

in which:

t = time in seconds.
A = area of upper surface of vessel in sq. ft.
C = coefficient of discharge (varies from .78 to .88 for 2-inch to 10-inch, respectively.
a = area of discharge opening in sq. ft.
g = 32.2.
h = initial head of fluid in feet.
h_2 = final head of fluid in feet.

This formula applies to vessels filled with water and correction should be made if other fluid is to be handled. An approximate correction can be made by dividing the "t" value expressed in seconds by the specific gravity of the oil and then dividing the quotient by 3,600 or the number of seconds in one hour to determine the time in hours and minutes.

In solving the problem you give by this formula we get the time as 155 minutes or 2 hours and 35 minutes.

Wants Investment to Make "Real" Money

As we will have some spare money coming in next month I would like some real advice from your department on this subject. I do not want to speculate, but I do want to make some real money in oil, and I want you to show me how to do it, on a sound financial basis.—J. H. L.

That portion of your letter having to do with possible investment in the oil industry has been referred to this department for answer.

We hardly know why you assume The Oil and Gas Journal in position to offer sound advice on the investment of money in the oil industry where it is desired to make a safe investment and at the same time secure large returns.

Capital invested in this industry is earning less than 5 per cent and there is an ample supply of additional capital available to organized companies in this industry for expansion if desired and the investment bankers would be glad to be assured of a 6 per cent return upon their capital and many of them will take considerably less.

You seem to be thinking in terms of the romance of oil where someone put up a little money and made a million dollars or more. Such things do not happen any more and there are entirely too many people actively engaged in the industry who are watching for opportunities to make investments that will insure fair returns to expect to be able to pick up opportunities to make "real" money out of this or any other industry.

You may come in contact with promoters who will make promises of large returns but remember the Security Exchange Commission is endeavoring to pass upon all such propositions and if you desire to be safe you should be sure that any proposition offered has been approved by the Security Exchange Commission.

Comparison of Wildcat Successes

Will you kindly advise the percentage of success of wildcat wells drilled by major companies having at their disposal the best geological and geophysical information as compared with the small independent whose source of information is limited?—C. F. B.

In reply to your letter you are referred to an article by the writer on page 13 of The Oil and Gas Journal of January 17, 1935, covering a review of wildcat operations in Rocky Mountain, Mid-Continent and Gulf Coast regions.

These figures were compiled for 1934 operations and in summarizing on page 31 the following statement is made:

"One fact was developed that is very significant. Of the 1,235 wildcats tabulated, 160 were drilled by the major companies and 1,175 by independents or promoters. Out of the 160 wildcat completions of the major companies, 43 resulted in the discovery of oil. This is 27 per cent of the 160 operations. The balance of the discoveries are credited to the other operators and total 61 strikes, or only .052 per cent of the holes drilled. These figures indicate the value of geology."

While these figures are for 1934 it is probably they hold good at this time for general conditions have not materially changed.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Quality of Crude Oil Produced in Germany

It will be much appreciated if you will supply us with several representative analyses showing the quality of the oil produced in Germany.—F. D. S.

The crude oils now produced in Germany are in a general way similar in composition to Mid-Continent oils. Most of them are mixed base, but the Nienhagen oils contain no asphalt. The sulfur content averages about 0.7 per cent with a maximum of 1.3 per cent. This information is from J. Weller's report in Petroleum Zeitschrift.

QUALITY OF GERMAN CRUDE OILS

Source	Grav. A.P.I.	Gasoline content %
Wietze:		
Heavy oil	17.5	0
Light oil	28.4	10
Nienhagen:		
South field:	24.0	2
North field	27.5	7
At the village	29.3-35.0	15
Oberg	39.0	20-25
Berghopen	35.0-33.0	15-20
Volkenroda	34.2	25
Moelme	32.1	17
Bruchsal	43.2-28.4	
Gifhorn	15.9	4
Fallstein	32.1	3

The original reports specific gravities; these have been converted to °A.P.I. in the table. The gasoline content is the distillate at 392° F.

References: J. Weller, German Crude Oils and Their Refining, Petroleum Zeitschrift, 33, 5, 1937. From Library Bulletin of Abstracts, 12, 123, 1937.

Limitations on Manufacture of Carbon Black and Process Yields

What limitations are placed upon the manufacture of carbon black? We get 12 cents per 1,000 cubic feet for our gas and think a small plant to convert to carbon black might be interesting. A process which it is claimed will produce 134 pounds of black per 1,000 cubic feet, has been called to our attention. What is the customary yield of carbon black obtained?—W. F. P.

The states of Texas, Louisiana, West Virginia and Oklahoma are the only ones that permit the operation of plants for the manufacture of carbon black from natural gas. In all of these certain regulations must be observed. The restrictions usually refer to the quality of the gas. A gas containing quantities of hydrogen sulfide so large as to render the gas unfit for use may be permitted to be burned for carbon black, is an example. Natural gas for carbon black may be purchased for much lower than 12 cents; it is reported that some contracts are made at the rate of one to two cents per 1,000 cubic feet.

The quantity of carbon black that may be made from 1,000 cubic feet of gas, must be directly related to the weight of carbon present. It is impossible for one to extract 134 pounds because 1,000 cubic feet of natural gas does not weigh that much. Natural gas varies but slightly in composition, and may be considered to be essentially methane CH_4. This contains 75 per cent carbon. The weight of 1,000 cubic feet is about 42 pounds, so then the maximum quantity of carbon that could be present is about 32 pounds.

The yield of carbon black obtained in the plants of the United States seldom exceeds 2 pounds per 1,000 cubic feet of natural gas. Considering the theoretical possibilities, it appears that the efficiencies of the methods in use are very low. The reasons for this are: The decomposition of the hydrocarbons, methane, etc., requires considerable heat, this comes from the combustion of a large part of the contained carbon. The quantity of carbon consumed depends on the control of the air supply.

Over 80 per cent of the carbon black produced in the United States is made by the Channel process. The gas is burned to make a smoky flame, through which an iron channel is passed. The carbon deposited on the cold iron is removed by scrapers, conveyed to bolting machines, compressed and finally packed in paper bags, each weighing 12.5 pounds. The entire operation is continuous and automatic.

There is an extensive literature relating to the carbon black industry. Consult index of Ind. Eng. Chem. 1926, 1928, 1931. The Oil and Gas Journal June 16, 1927, page G-198; June 19, 1930, page 76; April 2, 1931, page 114.

Size of Particles of Carbon in Gas Flame

The luminous flame from a gas is said to be due to particles of carbon. I wish to ask if the size of such particles is known?—W. M. W.

McAdams discusses the radiation of heat from particles in flames, in which he states: "Powdered-coal flames contain particles varying in size from one-hundredth of an inch down, with an average size in the neighborhood of a thousandth of an inch. The suspended matter in luminous gas flames has its origin in the thermal decomposition of hydrocarbons in the flame due to incomplete mixing with air before being heated, consists of carbon and of very heavy hydrocarbons, and has an initial particle size of about twelve-millionths of an inch."

Reference: William H. McAdams, Heat Transmission, page 73.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Hydrochloric Acid
(Muratic Acid)

Use—Treating; acidizing oil wells.

Form—Solution of gas in water. Several concentrations.

Odor—Pungent fuming acid.

Formula—$HCl\ H_2O$.

Specific gravity—1.194 (C.P. 35-37%)
1.142 (18° Be. 27.92%)
1.160 (20° Be. 31.45%)

LIMITATIONS

Color, max. ..... Slight yellow
Total solids, max., per cent 0.07
Specific gravity ..... According to grade

Note. The technical grades of hydrochloric acid are available by density degrees Be., 16, 18, 20 and 22. The special grade used for acidizing in oil wells contains an inhibitor to retard action on metals.

Reconversion to Acid Disposes of Acid Sludge Problem

Kindly let us know, if possible, whether you are acquainted with a method for working up acid sludge in such a manner that the sludge neither does not burn nor is concentrated in black sulfate.—V. M. A.

It appears that one of the most satisfactory methods for handling acid sludge is to so treat it that the acid will be recovered.

The first successful plant of this type to operate on a commercial scale was installed in 1932. This process was developed by the late I. Hechenbleikner, as described in the literature. A paper on the subject was presented before the World Petroleum Congress last June and was published in the United States in July.

The first plants involved: (1) Continuous thermal decomposition of acid sludge into sulfur dioxide and coke in a rotary kiln by means of hot combustion gases produced in a separate furnace and introduced directly into the interior of the rotary kiln. (2) Purification of the sulfur dioxide gas. (3) Conversion of the sulfur dioxide into acid in a contact sulfuric acid plant, using vanadium catalyst.

The important difficulties concerned the purification of the gas, which now include: (1) Passing the gas through spray towers and scrubbers. (2) Oxidation of the hydrocarbons by passing the gas through a secondary combustion furnace. (3) Cooling the gas again. (4) Removal of acid mist by means of a Cottrell mist precipitator. The gas then enters the acid plant proper.

The plant at Petrolia handles sludges largely produced in the manufacture of medicinal oils and yield but little hydrocarbons. Methods were devised for analyzing the sludge. A definite quantity of the sludge heated in a closed flask furnished a means for measuring water, sulfur dioxide, condensable hydrocarbons and uncondensable hydrocarbons evolved and residual coke.

An example of the Petrolia sludge follows:

PETROLIA ACID SLUDGE

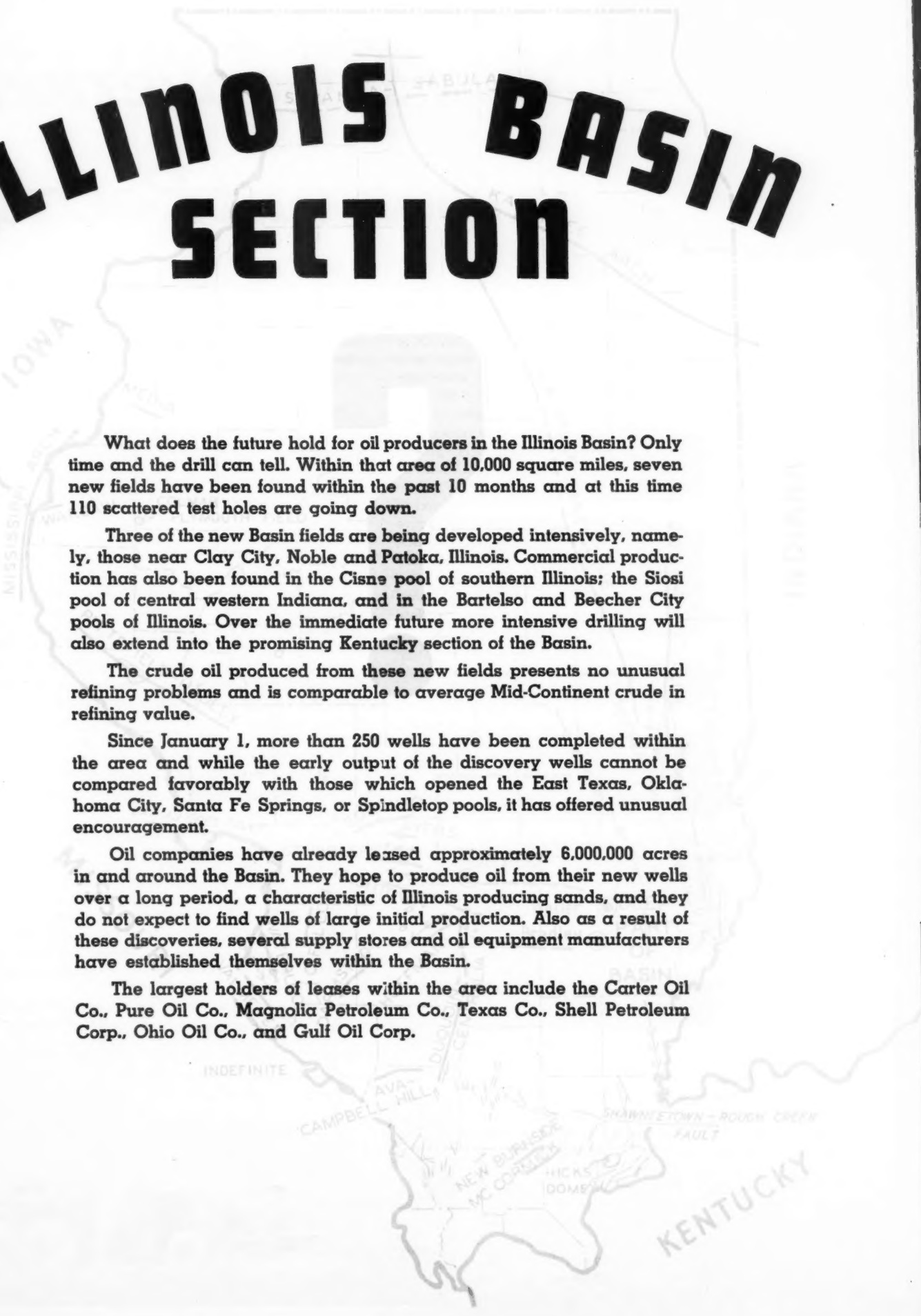
	Per cent
Sulfur dioxide	37.7
Water	21.0
Condensable hydrocarbons	1.8
Uncondensable hydrocarbons	0.2
Coke	39.0

Good operation requires that the SO_2 be reduced to 7-8 per cent before contacting, and there must be about 1.4 times as much oxygen as sulfur dioxide.

Investigations indicated that American refineries produced sludges yielding 5 to 6 per cent condensable hydrocarbons and 0.5 to 1 per cent fixed hydrocarbons. These large quantities of hydrocarbons are removed by producing a stronger gas in the decomposing kiln. A method of decomposing the sludge by direct contact with inert heated solids was developed. Gases containing 80 per cent sulfur dioxide have been obtained. The Petrolia plant produced over 52 tons of fuming acid per day during 1936.

References: Spangler, Modified Acid Recovery Process Treats Troublesome Sludges, Chem. Met.; July, 1937, p. 368. Recent Progress in Refinery Acid Recovery, Physics, Chemistry and Refining Division, Second World Petroleum Congress, Paris, France, June 14-19, 1937. Proc. Amer. Pet. Inst., 14th An. Meeting, Chicago, 1933, p. 106. Bartholomew, Chem. Met. 40, 642, 1933.

ILLINOIS BASIN SECTION



What does the future hold for oil producers in the Illinois Basin? Only time and the drill can tell. Within that area of 10,000 square miles, seven new fields have been found within the past 10 months and at this time 110 scattered test holes are going down.

Three of the new Basin fields are being developed intensively, namely, those near Clay City, Noble and Patoka, Illinois. Commercial production has also been found in the Cisne pool of southern Illinois; the Siosi pool of central western Indiana, and in the Bartelso and Beecher City pools of Illinois. Over the immediate future more intensive drilling will also extend into the promising Kentucky section of the Basin.

The crude oil produced from these new fields presents no unusual refining problems and is comparable to average Mid-Continent crude in refining value.

Since January 1, more than 250 wells have been completed within the area and while the early output of the discovery wells cannot be compared favorably with those which opened the East Texas, Oklahoma City, Santa Fe Springs, or Spindletop pools, it has offered unusual encouragement.

Oil companies have already leased approximately 6,000,000 acres in and around the Basin. They hope to produce oil from their new wells over a long period, a characteristic of Illinois producing sands, and they do not expect to find wells of large initial production. Also as a result of these discoveries, several supply stores and oil equipment manufacturers have established themselves within the Basin.

The largest holders of leases within the area include the Carter Oil Co., Pure Oil Co., Magnolia Petroleum Co., Texas Co., Shell Petroleum Corp., Ohio Oil Co., and Gulf Oil Corp.

New Discoveries of Important Because

A total of about 250 wells have been drilled throughout the Illinois Basin area since January 1, 1937. Over one-half of these wells have been producers in seven new producing areas, three of which have grown to important size and added materially to Illinois proven crude oil reserves. Activity continues at a rapid rate in both the proven areas and in wildcat exploration, and at the present time approximately 110 active locations are spread throughout the basin, of which almost one-half are exploratory tests on wildcat blocks. Daily production from the state of Illinois has been considerably more than doubled over the past nine months due to the discovery of new fields. New production now averages about 18,000 bbls. per day.

The high smoke stack on this coal-fired boiler helps to furnish steam for a cable-tool rig in the townsite of Patoka

Although boom conditions continue to prevail, the former situation of near-hysteria is subsiding, as a sufficient number of dry holes and producing wells have been drilled and completed to give some reliable indication of what may be expected in the future, and at the same time permit a comparison of the new fields with old ones from the same horizons. It is now generally agreed that, although some wells which penetrate a porous section of the Lower Mississippian Oolitic lime will yield flashy initial productions up to 100 bbls. per hour or more, production decline will be rapid, and the greater portion of the ultimate production will be obtained from small pumping wells over a long but profitable life. In other words, the new fields producing from their present levels should be regarded as typical Illinois fields, rather than a "second East Texas or Rodessa." Such an evaluation, however, by no means is intended to discount the attractiveness of the new fields. They should be compared with other Illinois fields which have been producing from the same horizons for many years.

The old southeastern fields have produced about 418,000,000 bbls. of oil to date over about 32 years, and have yielded profitable recoveries per acre foot.

Attractiveness of the area is further enhanced by the presence of commercial production in certain upper sands of the Chester series which were passed up in some wells in order to drill to the prolific McClosky lime. Furthermore, these conclusions relate only to production developed from present levels, with which reliable comparisons can be made. Production has long been obtained from rocks of older geological age than the Ste. Genevieve of Lower Mississippian age in both western Indiana and Illinois. Under favorable structural conditions those same deeper beds offer attractive wildcatting objectives. In this basin, also, thick sedimentary sections are known to exist in and below the Lower Mississippian, which may produce under proper porous and structural conditions. In all probability, it will not be long before a wildcat test upon an attractive Illinois Basin block will not be considered complete until it goes at least to 7,000 feet, through the Devonian, Silurian and into the upper series in the Ordovician.

In the area as a whole, new fields have been opened in two main fronts, and wells which indicate themselves to be possible field openers have been or are being completed at five other notable points.

New Patoka Field

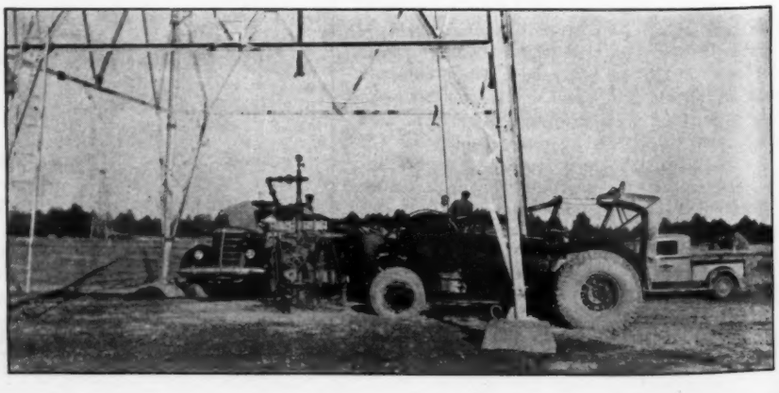
First, the Patoka field in Patoka Township, Marion County, Illinois, was the result of improved technique and continued search for new oil along a previous production trend. The Patoka field lies almost directly north and in the trend of the old Sandoval, Junction City, Brown, Langeuisch and Womac pools. The areal extent of Patoka has already exceeded that of the older fields to the south, over 50 wells having been completed there to date with a daily average production of about 40 bbls. per well per day. This new find is resulting in the search for additional commercial production in this and similar "trends."

The Patoka discovery, of course, was not so important in stimulating the present basin activity as the second find in Clay, Richland and Wayne counties, where the second front of new production and reserves has been opened up. During 1935 and 1936 the reflection seismograph was used to check structural disturbances across this area and into Jasper County. After prolonged detailed mapping definite indications were found of an elongated anticlinal feature extending southwest from the Oakland anticline, bisecting the LaSalle anticline in the east central part of Cumberland County, cutting the Clay-Richmond County lines, and extending into central Wayne County to the south, and up into east central Vermilion County to the north. All new pools in this portion of the basin have been located along this axial trend.

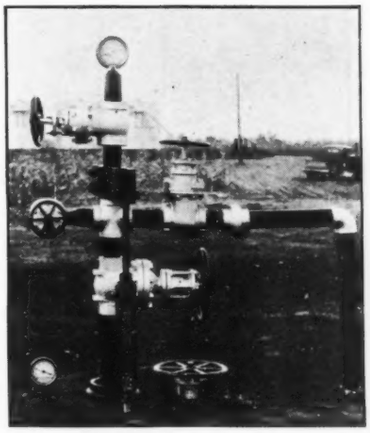
Clay City and Noble

Prompted by their geophysical discovery, and after the assembly of more than 250,000 acres along this elongated anticline, Pure Oil Co. drilled the discovery wells in the Cisne field of Wayne County and the Clay City field of Clay County, 12 miles apart. Both locations were made from seismic mapping. Oil was discovered in both tests in the porous sands of the basal Chester. The Clay City well was deepened and opened first prolific production from the Oolitic lime

It is the growing practice to go back into older producers in Clay City and apply stage treatments of acid



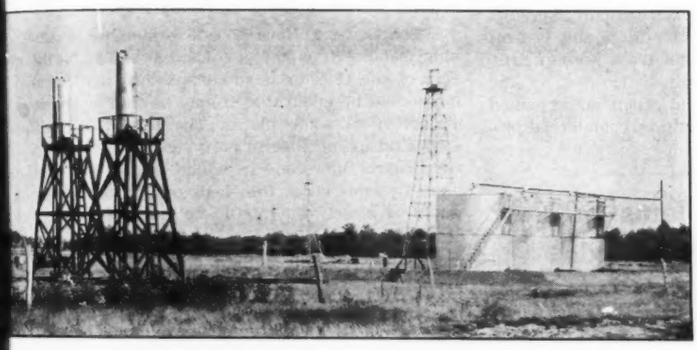
Oil in Illinois Basin of Ready Market



Well head hook-up in the Noble field

portion in the upper part of the Lower Mississippian, locally termed the McClosky, in the latter part of May, 1937. The well's initial production was 2,640 bbls. per day from a depth of 2,964 feet. This horizon is now the objective of all wildcats in the basin area. About 70 producing wells have been completed at Clay City, with five dry holes. Daily average production amounts to about 14,000 bbls. Wells are rapidly going to pumping.

Soon thereafter, a new producing area was opened by the Ohio Oil Co. in the McClosky lime, known as the Noble field 8 miles northeast of Clay City in Richland County, but along the same Oakland



Most operators at Noble and Clay City elevate their separators. The small one is for individual well gauging, while production from all other wells on the lease flows into the larger one

anticlinal feature. This field has more recently been extended about 2 miles to the northeast, and 1½ miles to the south into the townsite of Noble. To date, about 20 producers have been completed here; there are now 16 drilling operations in the area, as further development of apparently proven acreage. Daily oil withdrawals amount to about 2,200 bbls.

Three small producers and one dry hole have been completed in the Cisne field south of Clay City, indicating that this discovery will prove to be relatively unimportant.

The Cisne, Clay City and Noble fields have established a new trend of production in the basin, all closely following along the southwestern extension of the Oakland anticline. Informed geologists have predicted that more important discoveries will be found further to the north, approaching the intersection of the two main features. This strip is about 15 miles wide and 60 miles long, and is solidly leased. Pure Oil Co. is the largest lessee in the trend. Outside of this immediate area, leasing and wildcatting continues at a rapid pace, extending over an area of about 7,000,000 acres. Production from the McClosky limestone has been indicated to depend more upon a good porous condition than any marked structure. Wells which have had big initial productions have been those which penetrated soft and porous Oolitic layers. "Bone dry" wells nearby indicate that this condition is not consistent over any large area, as the oolites change even from location to location into dense and tightly cemented beds. The areal extent of the McClosky Oolitic lime deposition is very wide, however, and it has produced wherever a favorable effective porosity existed in the rock. Much of the wildcatting, or exploring on the distant flanks of present fields, has been in search of a porous deposit of McClosky, rather than upon any structural theory.

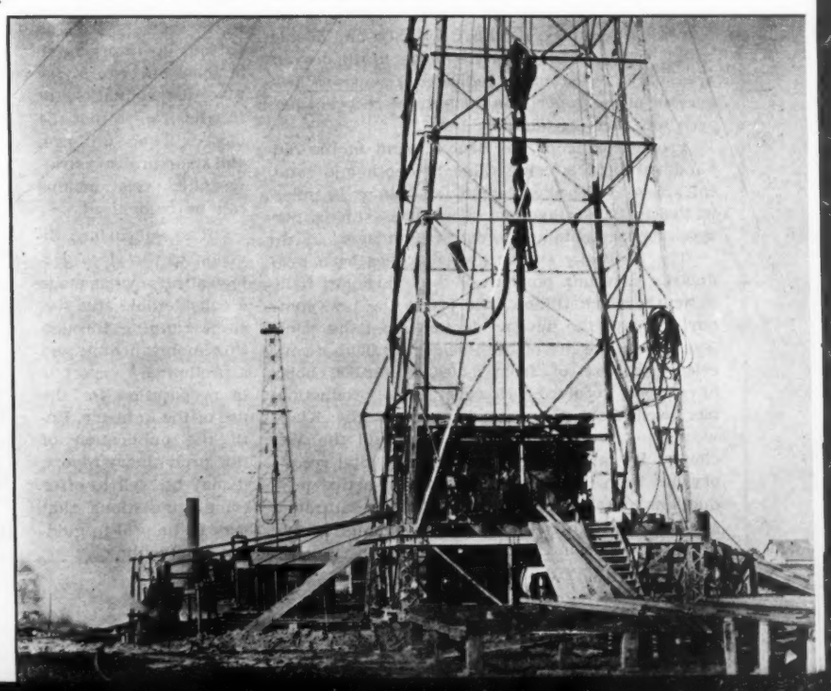
One of the few drilling derricks to be mounted on substructure in the Clay City development

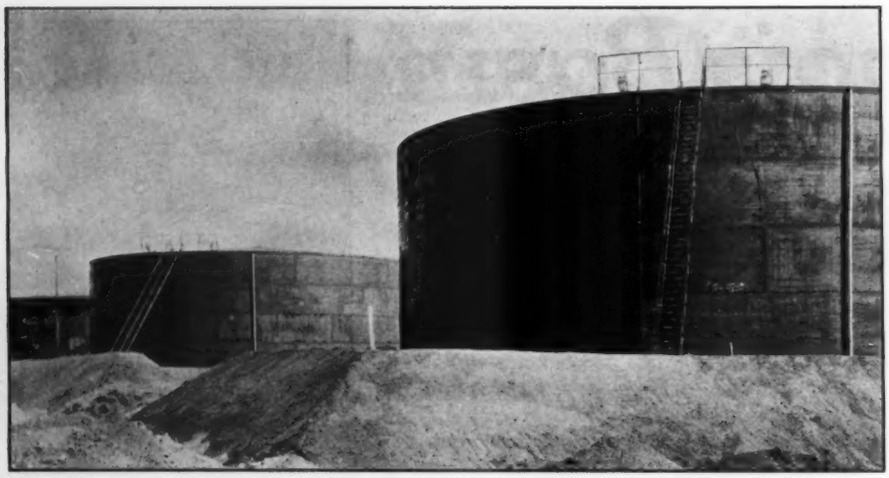
New Field Extensions

In addition to important extensions along the Clay City-Noble field trend, wildcat wells in other portions of the basin are at this time indicating themselves to be potential field openers while they are in the testing stage. These areas may be quickly enumerated as (1) Prairie Creek Township, Vigo County, Indiana, where the Hunton lime has yielded attractive showings at about 2,100 feet; (2) Carter Oil Co.'s discovery well at Beecher City, Ill.; (3) the Benedum & Trees' Knapp well in northern Wayne County, Kieth Township; (4) two and one-half miles north of Flora, and about 10 miles northwest from Clay City, Monogham and others No. 1 Liebke recently appeared as a new field opener after coring 10 feet of well saturated Oolitic McClosky from 2,987 to 3,000 feet; (5) many additional acres apparently have been added to those in the area proved last week when Gulf Oil Corp.'s first wildcat in the area, No. 1 James Laughton, cored saturation in the Ste. Genevieve. This location is about 7 miles due north of present production in the Clay City field.

The rapid rate at which the producing areas have been opened has resulted in lease and royalty prices soaring out of all reason throughout the entire basin area. Practically all offerings have been made without any regard to known intrinsic values. While the new fields were being opened and developed, however, over 100 dry holes have been drilled. The fact, together with a same comparison of the new fields with those comparable ones which have been producing many years, has offered a clearer conception of actual values.

Undoubtedly, throughout such an extensive area as is now under





Three 55,000's have been built at Pure Oil Co.'s tank farm at Noble

lease, much of which carries drilling obligations within 90 days to one year, many test wells will have to be drilled over the next few years to test the structural and porous conditions of the McClosky limestone, and deeper objectives. Due to the fact that producing wells have been completed where porous conditions are favorable, without regard to pronounced structure, many more tests and dry holes will have to be drilled than would otherwise be necessary.

Furthermore, there is every reason to expect that other important producing areas will be opened up as a result of this present exploratory campaign, and the wildcatting which will follow. Development within the proven portions of new areas, or to deeper levels in old fields, may keep the Illinois Basin at boom pitch for a long while. The rapidity with which this extensive territory will be explored by test wells is hard to predict. Experience gained in the old fields of Illinois indicate that a great many wells will have to be drilled in the new producing areas to afford a reasonable daily production in future years, when production from individual wells decline to their low characteristic level during their long pumping life.

Reserves

Estimates of newly established reserves in Illinois since the first of 1937 have varied widely. Ultimate recoveries up to as high as 200,000,000 bbls. have been predicted from the new areas to date. Such assumptions, of course, have been predicated upon the belief that large sections of intervening territory in the Clay City and Noble trends will be productive. Estimates in the proven area only, based upon indicated recoveries per acre, or more properly on the basis of recovery per acre foot, are considerably less.

Production from the Benoist sand in the old Sandoval field is comparable in depth and sand thickness to the new Patoka field about 10 miles to the north. An average of about 4,000 bbls. per acre has been obtained to date at Sandoval.

The McClosky Oolitic limestone has been productive in certain portions of the Bridgeport field in southeastern Illinois, and offers the best comparison with the new production from the same level. Over the life of the Bridgeport field, recoveries per acre of from 12,000 to 16,000 bbls. have been received. However, this production has been from three sands, namely the Kirkwood and Tracey (Chester series) and the Mcclosky. By far the greater amount of total recovery has been from the McClosky, but actual productions by sands are not available. The saturated McClosky is slightly thicker on the average in the new fields than in the older ones. A conservative recovery per acre in the Clay City and Noble fields, for an average of 10 feet of porous and saturated lime, appears to be about 8,000 bbls. per acre, or 800 bbls. per acre foot. The areal persistence of the porous section of this rock is difficult to predict at this time. The fact that the dip of this bed off structure appears to be slight from present drilling, indicates a rather wide distribution of the lenticular oil reservoirs, and when accompanied with a favorable porous condition, commercial production should result.

Correlation Problems in New Illinois Basin Fields

In the present oil development in the Illinois Basin, the most important oil-producing horizon thus far discovered is the "McClosky sand." This is, in reality, any Oolitic limestone occurring in the Fredonia limestone member of the Ste. Genevieve formation, where oil accumulation has taken place in the pores originally present in the rock, according to the Geologic Survey Division of the State of Illinois. In summarizing the findings the survey points out:

"As the 'McClosky' is approached, the Lower Chester deposits lying below the Cypress sandstone are quite variable in character so that there has been considerable difficulty in correlating these formations. Especially difficult is the determination of the location of the contact of Chester beds on Lower Mississippian beds. It is important to the industry that the various operators agree at once on criteria for the determination of this horizon so that the logs will be uniform, and structural and stratigraphic relationships can be recognized.

"The subsurface division of the state geological survey has made a considerable study of cores running through this important zone and a preliminary report is in preparation for the use of the industry. Until the publication of this preliminary report, it may be well to offer some suggestions that may be helpful in guiding test drilling.

"The standard geologic section between the Cypress in the lower part of the Chester and the 'McClosky,' based on extensive stratigraphic studies of outcrops, is as follows:

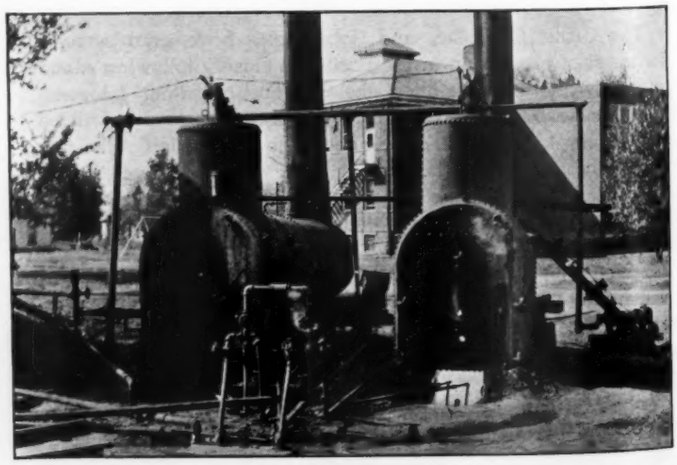
Mississippian system
- Chester series (lower portion)
  - Cypress sandstone
  - Paint Creek shale and limestone
  - Bethel sandstone
  - Renault shale and limestone
  - Aux Vases sandstone
- Meramec series (upper portion)
  - Ste. Genevieve formation
    - Lower O'Hara limestone member
    - Rosiclare sandstone member
    - Fredonia limestone member (McClosky oil horizon at top).

"The whole interval between the top of the Cypress and the top of the Fredonia is commonly about 225 feet. The beds vary so greatly in thickness from place to place that a statement of individual formation thicknesses is not attempted here. Usually all formations are recognizable by comparison with standard logs, but there are few criteria for recognizing individual members.

"The Lower O'Hara limestone member is commonly about 20 to 30 feet thick, but erosion at the base of the Chester is so conspicuous that warning should be given that it may be thin or absent altogether at some places. The formation itself shows up in the core to be typically very fine to very coarse limestone in which Oolites are common. In some cores thin beds of Oolitic rock resembling closely the 'McClosky' have appeared.

"The 'McClosky' of the Fredonia limestone member is typically a light gray pure limestone made up of exceedingly well sorted Oolites of fine to coarse size. Rock in which there is no interstitial material and in which secondary filling of pores has not taken place is the typical reservoir rock of the various oil fields.

"Of great significance is the fact that the porous zones are found at various depths below the base of the Rosiclare sandstone member. This variability calls for the warning that a well should not be abandoned because it has not shown the 'McClosky sand' within the depths below the Rosiclare generally observed. It is altogether possible that 'the McClosky' is any porous zone in the formation, whether at 5 feet or 95 feet below the Rosiclare. To complete a test of the 'McClosky,' drilling should therefore continue until salt water is encountered or until the St. Louis formation is reached."



Illinois is not without its townsite drilling. Here is seen the boiler set-up in the school yard in Patoka. Crude oil is used for fuel

SERVICE ON NEW FIELDS

CLAY CITY FIELD, CLAY COUNTY, ILLINOIS

Compiled by The Oil and Gas Journal, October 20, 1937

Approved Name:

Clay City oil field.

Geographic location:

Two miles south of Clay City, Ill.; southeastern portion of Clay County.

Principal towns and cities near field:

Clay City, 2 miles, population 707; Noble, 8 miles, population 600; Olney 15 miles east, population 6,140; Flora, 8 miles west; Effingham 41 miles north; Chicago 220 miles.

Cities and towns where supply houses have branches:

Most of the supply houses are in Clay City, or on the highway between Clay City and the field. Representatives of supply houses not having branches in the field are stationed at Flora, Olney and other points in the area.

Railways serving the area:

The main line of the Baltimore & Ohio Railroad runs east and west through Clay City. The Illinois Central Railroad runs north and south nearby.

Character of roads:

Clay City is on U. S. Highway No. 50. Good paved roads extend throughout the entire area. Company roads are being built in the field.

Trucking companies:

Trucking contractors are located in Flora, Clay City, Noble and Olney.

Hotel and other accommodations:

Good hotel accommodations have been at a premium throughout the area, and many of the oil men have stayed considerable distances from the field. Small, but comfortable, hotels are operated at Flora and Olney, but reservations must be made considerably in advance. Effingham and Mattoon to the north offer larger hotel facilities.

Schools and churches:

This general area has long been rather thickly settled as a farming area, and is well supplied with schools and chuches, and should be able to adjust itself to the boom conditions.

Development:

The discovery well, Pure Oil Co. No. 1 Weiler, SE SW SE section 33-3n-8e, was completed on February 26, 1937, in the Cypress sandstone. Shortly thereafter, Pure Oil Co. No. 1 Travis, three-fourths of a mile north of Weiler No. 1, drilled to the McClosky limestone and opened the deepest part of the basin to prolific production and started the present activity. Initial production was 2,640 bbls. per day, total depth 2,964 feet.

Domestic water supply:

Water for domestic purposes in Clay City is from the city system; in the field it is from dug wells, or through company water systems.

Electric power and gas companies:

Purchased electric power is available in the area. Natural gas is at a premium. Wood and coal are used for domestic heating.

Completions to date:

At present there have been about 70 completions in the Clay City field, and five dry holes.

Number of operations:

Approximately 24 wells are either rigging up or drilling at Clay City.

Future activity:

Pure Oil Co. is by far the largest leaseholder in the field. They are running five rigs of their own and five contract rigs in the field, and will probably continue development at this rate until the field limits are more nearly defined.

Type of drilling equipment used:

The discovery well was drilled with cable tools, requiring about four months to complete. Light duty portable rotary outfits, powered by gasoline or diesel engines, or steam rigs fired by crude oil or casinghead gas, are now standard for Clay City drilling.

Derricks:

The shallow drilling has not required high derricks. The 89- or 122-foot derricks are common. Substructures are seldom used.

Fuel:

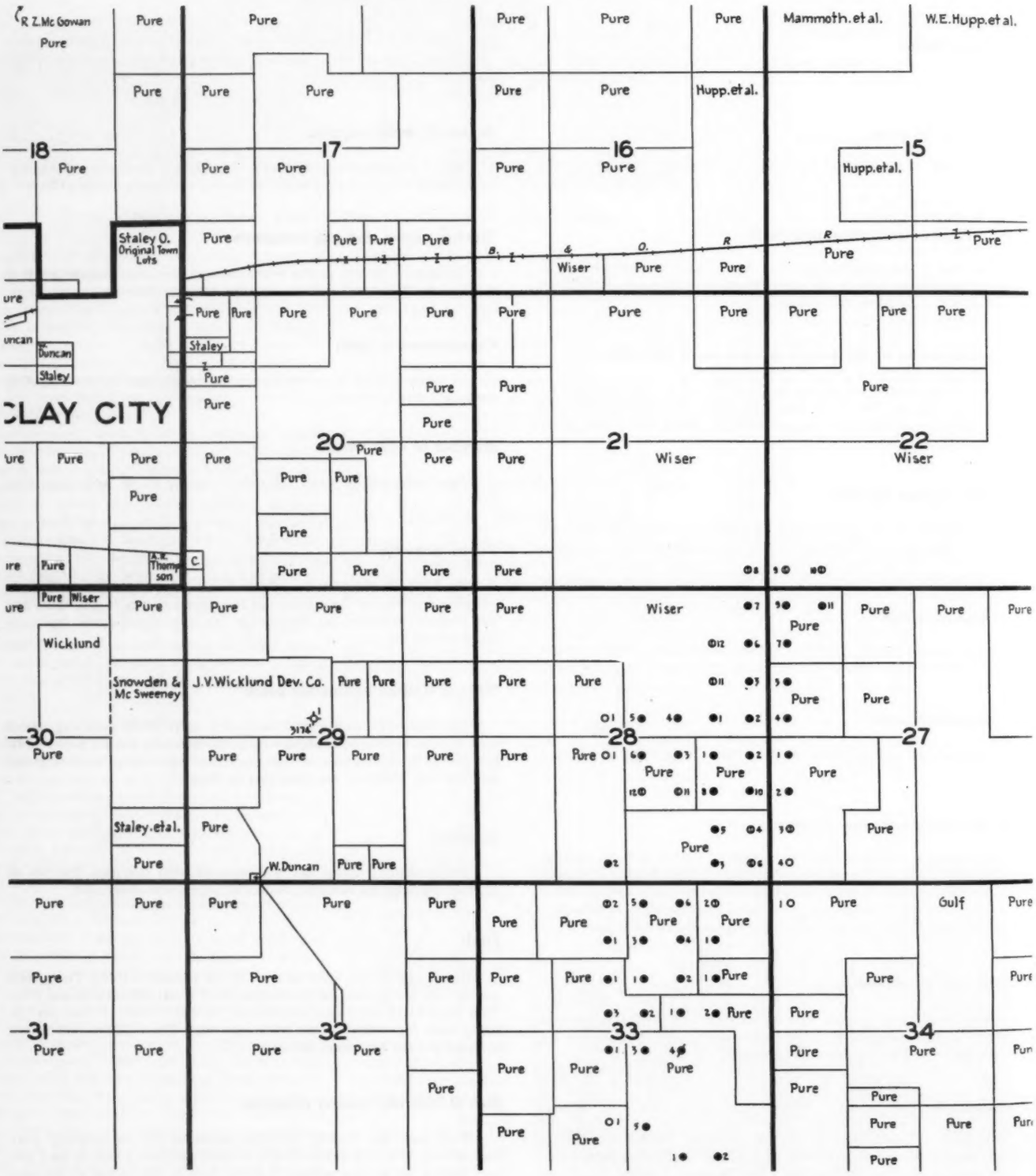
Diesel engines are most common in the present drilling. Those companies who are already in production have small amounts of gas from their separators for steam drilling, if desired. Crude oil has, and is, being used for fuel in some few steam rigs. Three 72-hp. boilers are commonly used for steam drilling.

Size of hole and casing program:

Well sizes vary slightly between operators, but the majority have been drilled with 13½-inch rock bits to about 250 feet, where 12-inch surface pipe is set and cemented. A 9-inch hole is cut to top of the producing sand, where 7-inch casing is set and cemented. Standard tools

SERVICE ON NEW FIELDS

Ownership Map of the Clay City Pool of Illinois



SERVICE ON NEW FIELDS

are usually moved in for completion of the well, cutting a 5-inch hole into the pay section.

Type engines:

The size gasoline or diesel engines vary from 125 to 225 hp. Two are used on each rig, compounded for running the pump or drawworks separately, when necessary. Typical steam rotaries have the 11 by 11-inch drilling engine.

Type of bits and stems:

Rock bits are used throughout the entire hole. From 15 to 25 feet of 4-inch drill collar is used on the 4-inch drill pipe.

Tubing used:

All flowing wells are equipped with 2½-inch tubing. This size is reduced to meet individual well requirements when wells require pumping upon completion.

Speed of drilling:

After having gained sufficient knowledge of local conditions at Clay City, drilling time with rotary tools has been cut to the almost standard time of 15 days, on and off.

Character of mud:

About 10½-pound per gallon mud, 38 viscosity, has been found best for the local conditions. The mud laden fluid must have sufficient wall strength to combat the caving formations and heavy salt water sands: also, it must allow rapid settling of abrasive sand and slate particles in the pits before reintroduction into the hole.

Slush pumps:

Usually one 14 by 7¼ by 14-inch slush pump will handle the requirements. A smaller pump, sometimes a 12 by 6½ by 12-inch, is used as a standby on some rigs, while others drill without such a reserve unit.

Water supply:

The general lack of a reliable source of water during all seasons has played an important part in the growing use of diesel or gasoline powered rotaries in this field. The water rights on nearby streams are tightly held. Shallow water wells, about 250 feet deep, will supply drilling needs except in the very dry seasons of the year.

General geology:

After detailed seismograph work in this area, begun in 1935 by Pure Oil Co., indications of an elongated anticlinal feature extending southwest from the Oakland anticline was observed. Location for the Clay City discovery well was staked on the western flank of this axial trend. All other fields in the deeper part of the basin have been along the same trend. The pay section here is the Oolitic limestone in the top of the Ste. Genevieve, locally called the McClosky lime. Beds of porous Oolites vary from 3 to 15 feet in thickness, with an average of 8 to 10 feet, at depths varying from 2,850 to 3,150 feet. As is characteristic of many other limestone reservoirs, sufficient effective porosity is often lacking in the McClosky to yield commercial production, and dry holes have been drilled offsetting good producers. The porous condition of the Oolitic lime is much more important than structure, as the McClosky occupies an irregular and lenticular position in the Ste. Genevieve, and it has been penetrated at widely varying depths within a small area.

PRODUCTION PRACTICE

Methods of producing oil:

None of the Illinois fields are prorated. Wells are allowed to flow through open 2½-inch tubing as long as they will do so. Casing pressures average about 250 pounds and tubing pressures about 150 pounds initially. Due to the lack of gas in the reservoir, and the absence of any active water drive, pressures drop off rapidly and the wells are going on the pump after a comparatively short flowing life.

Separators and tankage:

It is the common practice to elevate two separators, one for individual well gauging and the other for all other wells on the lease. A pressure of 20 pounds is carried on each trap. Stock tanks are usually the 250 bbl.-size, in batteries of from three to eight tanks.

Pumping conditions:

Three powers are being installed in the Clay City field at this time, one bandwheel type and two geared powers. Portable gasoline engines operating small beam pumping units have been used in the field up to the present time, but as the flowing life of the field is indicated to be short, the construction of the central powers is being rushed. The severe weather conditions during winter months in this part of the county will present the greatest problems during the field's indicated long pumping life.

Water conditions:

Wells that have drilled entirely through the Ste. Genevieve have found no bottom hole water. Some small volumes of water are being produced on the western edge of the field, but its source is not definitely determined. Due to the lensing deposition of the porous Oolites, water levels will probably always be poorly defined.

Shooting and acidizing:

It is now almost standard practice to acidize all McClosky lime wells upon completion, and some operators are going back into old producers and applying stage treatments.

GENERAL DATA

Gasoline plants:

Due to the relatively small amounts of gas associated with the oil, and the absence of any free gas at any point in the field, the construction of gasoline plants has not been possible.

Outlet for the oil:

Originally all oil was moved out of this field in tankcars, loaded on the Baltimore and Ohio lines. Pure Oil Co. has now completed their 8-inch line from the field to Martinsville, Ill., to connect with the Illinois Pipe Line Co. Their initial terminal is three miles east of Noble, Ill., where three 55,000 bbl. tanks have been built. A 400 hp., two unit, gas driven pump station has been built, capable of handling 24,000 bbls. daily under peak capacity.

SERVICE ON NEW FIELDS

NOBLE FIELD, RICHLAND COUNTY, ILLINOIS

Compiled by The Oil and Gas Journal, October 20, 1937

Approved name:
Noble oil and gas field.

Geographic location:
About two miles north of the town of Noble, Ill., in west central Richland County.

Principal towns and cities near field:
Noble, 2 miles, population 600; Clay City, 8 miles west, population 700; Flora, 15 miles west, population 4,400; Olney, 7 miles east, population 6,140; Effingham, 51 miles north, population 15,000; Chicago, 225 miles north.

Cities and towns where supply houses have branches:
Same as Clay City field.

Railways serving the area:
The main line of the Baltimore & Ohio Railroad runs east and west through Clay City. The Illinois Central Railroad runs north and south nearby.

Character of roads:
Noble is on U. S. Highway No. 50. Good paved roads extend throughout the entire area. Good gravel road extends north from Noble to the field, a distance of about two miles.

Trucking companies:
Same as Clay City.

Hotel and other accommodations:
Same as Clay City.

Schools and churches:
Same as Clay City.

Development:
Ohio Oil Co. completed their No. 1 Arbuthnot, NW corner of section 8-3n-9e, in mid-August, 1937, as the discovery well in the Noble field. Initial production was 1,600 bbls., with 960,000 feet of gas, total depth 2,988 feet.

Completions to date:
At present there are 20 producing wells in the field. Four dry holes have been drilled.

Number of operations:
Approximately 16 wells are either rigging up or drilling at Noble, or nearby extensions.

Future activity:
Recently important extensions have been made to the northeast of Noble about 1½ miles, and to the south in the townsite of Noble. Whether or not a porous condition in the McClosky lime persists between these outpost points remains to be seen from drilling, but drilling is certain to be active over the next few months. Rapid development on town lots in Noble is expected if production from the one well there holds up to expectations.

Type of drilling equipment used:
The discovery well was drilled with cable tools. Light duty portable rotary outfits are now used almost entirely to the top of the sand, where tools are standardized for drilling through the producing section.

Derricks:
The 89- or 122-foot steel derricks are in use here. Most derricks are set on wooden timbers, rather than substructures.

Fuel:
Gas is more plentiful in Noble than Clay City, but most of the drilling has been done with diesel or gasoline engine powered rotaries. Gas has been used in some convertable type gasoline engines. Light duty steam rotaries, having three 72 hp. boilers, have been used. The lack of a reliable water supply for some operators makes steam drilling a problem.

Type engines:
The 11 by 11 steam drilling engines are commonly used on these light rotary outfits. The two gasoline or diesel engines used on that type rig vary from 125 to 225 hp. each, and are arranged in compound for running the slush pump or drawworks separately, when necessary.

Type of bits and stems:
Rock bits are used from the surface down. From 15 to 25 feet of 4-inch drill collar is used on the 4-inch drill pipe.

Size of hole and casing program:
Due to comparable depth and conditions, the same well construction is followed in Noble as in Clay City.

Tubing used:
Flowing wells are equipped with 2½-inch tubing. Tubing size is reduced to meet individual well requirements as wells go on the pump.

Speed of drilling:
After drillers become acquainted with local conditions, Noble wells are drilled in about 15 days, on and off time.

Character of mud:
Same as Clay City.

Slush pumps:
One 14 by 7¼ by 14 slush pump is generally all that is included in these light rotary outfits. Some have a slightly smaller pump as standby.

Water supply:
Water rights in nearby streams are tightly held. Shallow water wells, about 250 feet deep, will supply drilling needs except in the very dry seasons of the year. The general lack of a reliable source of water has discouraged the use of steam rigs at Noble.

General geology:
The Noble field lies in the northeastward trend from the Cisne and Clay City fields, and is situated on the eastern flank of the axial trend as indicated by seismograph mapping. The occurrence and characteristics of the McClosky limestone at Noble are quite similar to those in Clay City.

PRODUCTION PRACTICES

Methods of producing oil:
There are no proration restrictions on the producing wells at Noble. They are allowed to flow through open 2½-inch tubing as long as they will do so. Casing pressures average about 200 pounds and tubing pressures about 125 pounds initially, depending upon the porosity and thickness of the pay section. Pressures in the northeastern extension of this field are considerably more, due to a more porous condition in that direction.

Separators and tankage:
As in Clay City, it is the common practice to elevate the separator in order to operate on minimum pressure, usually 20 pounds. Some operators elevate two separators at each tank battery, one for individual well gauging, and the other for the remainder of the wells on the lease. The 250-bbl. stock tank is standard, in batteries from two to six.

Pumping Conditions:
Some wells here have required pumping upon completion, where a thin section of saturated lime with low porosity was penetrated. The small beam type portable pumping units, driven by gasoline or convertable gas engine is used. Eventually the field may be pumped by central powers or light duty back side cranking devices. The severe winter weather will present one of the most difficult problems during the field's indicated long pumping life.

SERVICE ON NEW FIELDS

Water conditions:

Due to the lenticular occurrence of the porous pay section at Noble, water levels will probably always be poorly defined. No definite indication of bottom hole water has appeared from present development.

Acidizing:

Original completions were not acidized, but the growing practice is to treat all wells upon completion. Also, some operators are going back into old producers that have rapidly declined in their production rate and are applying stage treatments.

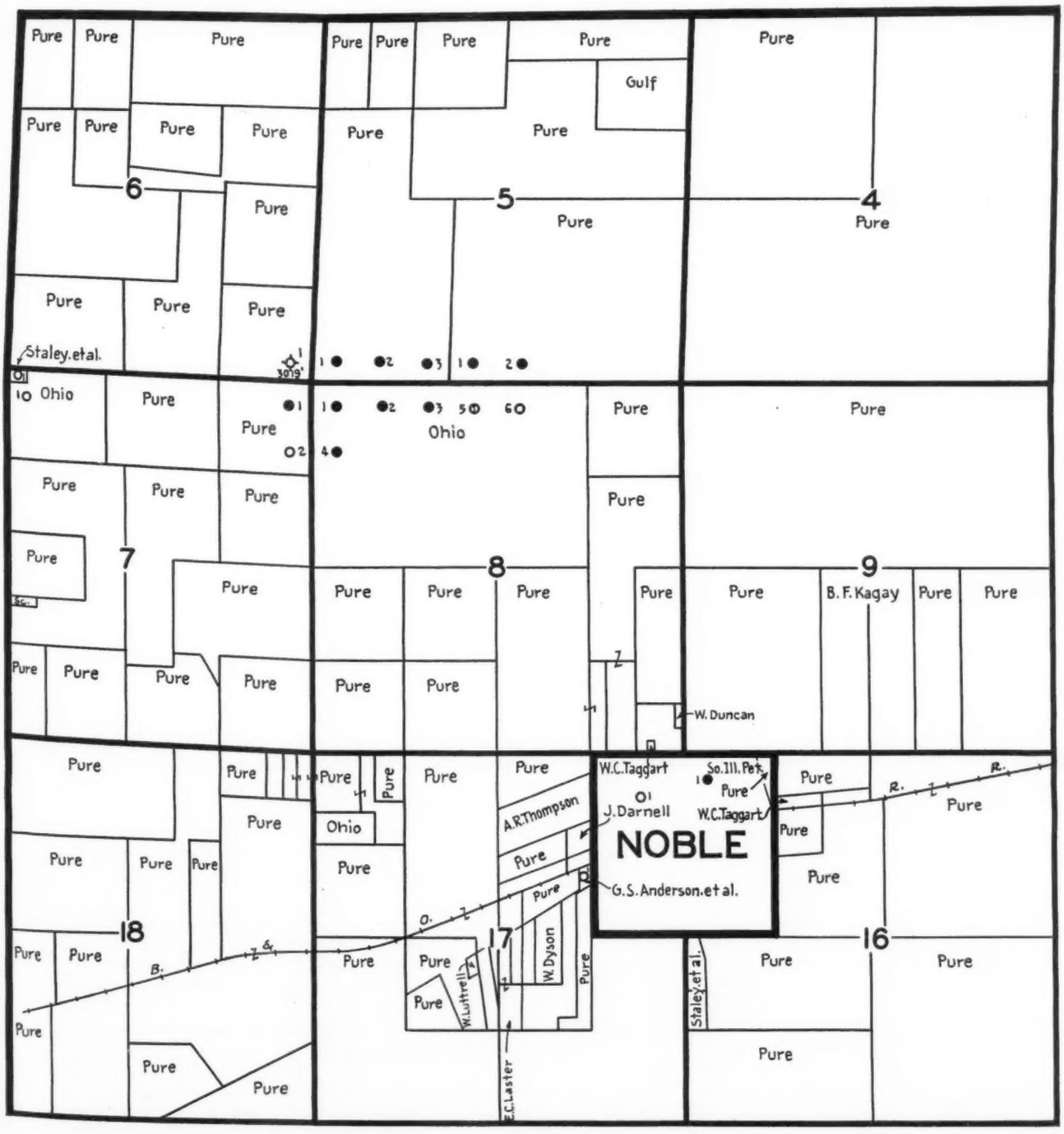
GENERAL DATA

Gasoline plants:

To date there is only one well at Noble producing any appreciable amount of free gas. Others produce at the ratio of about 200 to 300 feet per barrel, but the gas from such wells is taken from the trap for much needed field use, and pipeline station requirements. More gas will have to be developed before a gasoline plant is feasible.

Domestic water supply:

Water for domestic purposes in Noble is from the town system; in the field water is obtained from dug wells.



SERVICE ON NEW FIELDS

PATOKA FIELD, MARION COUNTY, ILLINOIS

Compiled by The Oil and Gas Journal, October 20, 1937

Approved name:
Patoka oil field.

Geographic location:
Situated in the northwestern corner of Marion County, Ill., in and around the town limits of Patoka.

Principal towns and cities near field:
Vandalia, population 4,400; 14 miles north; Sandoval population 1,300, 10 miles south; Centralia, population 13,000, 15 miles south; St. Louis, 85 miles west.

Cities and towns where supply houses have branches:
There are a few supply houses in the town of Patoka or nearby. Representatives of supply houses from the Clay City-Noble area serve the field. It is a distance of 51 miles from Patoka to Clay City supply center.

Railways serving the area:
The main line of the Illinois Central railroad runs north and south through the field and the town of Patoka.

Character of roads:
Patoka is on paved U. S. Highway No. 51, one of the main north-south highways through Illinois. Many of the wells are accessible on streets in the town; company roads have been graded in the field.

Hotel and other accommodations:
Small, but comfortable, hotels are operated at Vandalia, Salem and Centralia. Effingham and Mattoon to the northeast are headquarters for many of the oil men who are covering the entire basin activity.

Schools and churches:
Good schools and churches are provided at Patoka for a town of its size.

Development:
Adams-Louisiana Oil Co. No. 1 Merryman, center SE SW section 21-4n-1e, opened the Patoka field on January 27, 1937, by finding oil in the Benoist sand (basal part of the Chester series) at 1,391 feet. After drilling to a total depth of 1,418 feet, the sand was shot with 10 quarts of nitroglycerin, and made a 16-hour flow through one-half inch choke, averaging 87 bbls. of 38 degree API oil per hour. Initial production on the pump was 140 bbls. per day.

Completions to date:
At present there are about 65 producing wells in the Patoka field, and 13 dry holes. Daily average production per well is about 40 bbls.

Number of operations:
There are now 21 active locations either drilling or rigging up at Patoka.

Future activity:
The limits of production in the main part of the Patoka field have not been defined from present drilling. There remains a good many inside locations to be drilled. It has been estimated that at least 60 more wells will be drilled at Patoka, and more if structural conditions continue favorable.

Type of drilling equipment used:
Early wells were drilled and completed with cable tools. Small very light duty rotaries have since become common for drilling to the top of the sand, after which the rotary derrick and rig is skidded to permit portable cable tool spudder to come in and drill the sand. The diesel or gasoline operated units are most common. However, steam has been used and is being used at several wells, with crude oil, coal or wood as boiler fuel.

Derricks:
Some of the heavier type rotaries at Patoka have used the 89-foot steel derrick, mounted on wooden blocks. Wooden derricks are common. This rig is moved off for completion with standard tools, and the mast-head or gin-pole is used for that purpose.

Fuel:
There is practically no gas associated with the Patoka oil. All steam units, whether cable tool or rotary, are fired with one portable boiler mounted on wheels, using crude oil, coal or wood as fuel. Diesel or gasoline engines are most practical in this field, not only because they simplify the fuel problem, but because they also mitigate the problem of water shortage. These multiple cylinder power units are either mounted intact with the drilling rig, or mounted on skids on the ground, and connected to the rig through endless belt drive.

Type drilling engines:
Only the smallest type engines designed for this purpose are needed in this 1,400-foot drilling. One is all that is ever provided on each rig.

Type of bits:
Rock bits are used throughout the entire hole. About five are required per well.

Size of hole and casing program:
After setting short lengths of surface pipe, a 9-inch hole is cut by the majority of operators to top of the producing sand. The 7-inch producing string is usually cemented to top, requiring about 300 sacks. This is done to protect the string from corrossion occurring in the several salt water sands which are sealed off. Some showings have been had in the McClosky limestone here, which formation is productive at Clay City and Noble, and the large hole size for this depth is probably desirable in view of possible deeper drilling.

Tubing used:
All wells are put to pumping upon completion, with 2-inch tubing.

Speed of drilling:
About 48 hours actual rotary drilling is required to reach the top of the sand at about 1,380 feet. Standardizing and completioning requires about the same amount of time.

Character of mud:
Slight conditioning of the drilling mud is desirable to combat the several heavy salt water sands, and the tendency for caving in some formations.

Water supply:
There are no fresh water sands at any point in the Patoka field, and water supply is a problem. The Adams-Louisiana Oil Co., largest operators in the field, have buried a water system three feet deep from nearby streams, but they go dry in certain seasons of the year.

General geology:
A structural high has long been mapped at Patoka by Illinois Geological Survey Bulletins, and after seismograph mapping to determine the structure of deeper horizons, the discovery well at Patoka was drilled. This field lies in a previous production trend, almost directly north of the Sandoval, Junction City, Brown, Langeuisch and Womac pools. The Benoist sand has produced about 4,000 bbls. per acre in the Sandoval field, eight miles to the south, and a comparable recovery may be expected at Patoka, where sand thicknesses (from 10 to 15 feet) are quite similar.

PRODUCTION PRACTICE

Methods of producing oil:
There is no proration at Patoka. Wells are put to pumping immediately upon completion, and operated at full capacity.

Illinois Goes HINDERLITER

Noble, Illinois

Effingham

Patoka

Noble

E. St. Louis

Clay City

Clay City, Illinois

The new "hot-spot" of the Mid-West turns to Hinderliter Well Head Pressure Controls, to the extent that every well requiring a tubing head, but three, is equipped with Hinderliter Well Head Hook-ups.

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SERVICE ON NEW FIELDS

Separators and tankage:

Due to the entire absence of gas, production is run directly to stock tanks. Batteries of from one to four tanks of 250 bbl. size are used.

Pumping conditions:

Experience has shown from other Benoist sand fields that small oil volumes, increasing water volumes, and long pumping life may be expected at Patoka. At present, 2-inch tubing is universally used in pumping wells, with five-eighths inch rods. The shallow depth has permitted using the small 3 hp. gasoline engines on individual light duty beam pumping units. With proper counterbalancing, the very small 3 hp. gasoline engine has been found successful in handling offset wells off of stroke posts. A short pumping stroke, ranging from 8 to 12 inches, has been found most desirable for continual pumping at about 24 strokes per minute.

Water conditions:

Bottom hole water is present in the Benoist sand, but careful completion methods will minimize its encroachment. Experience from other nearby fields indicate that increasing water volumes may be expected.

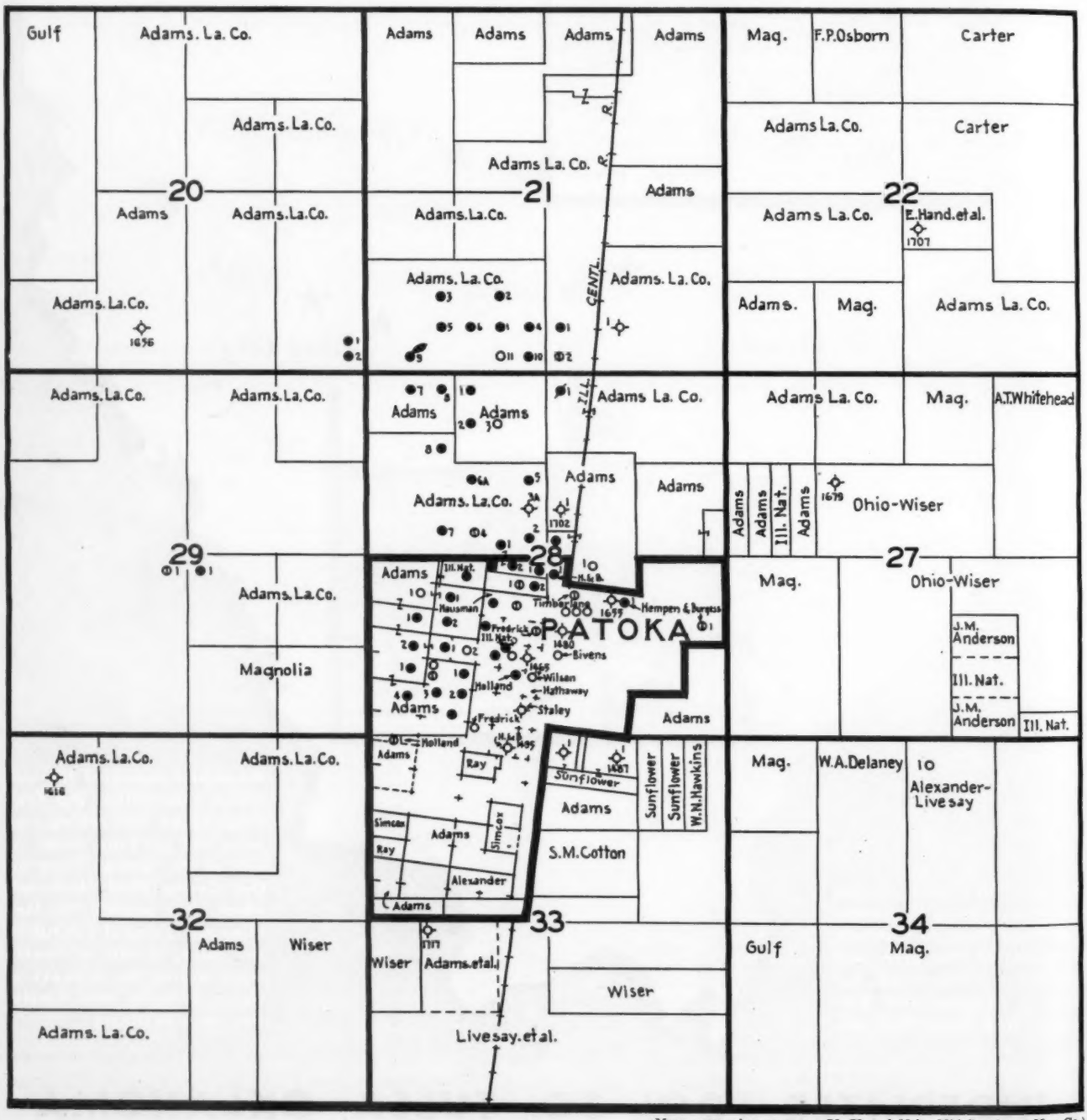
Shooting:

Light shots of nitroglycerin have been found very beneficial in boosting the initial productions of Patoka wells, and all holes are shot with from 5 to 15 quarts upon completion. Extreme care must be exercised to not shoot the hole into water, or damage the production string set upon top of the sand.

GENERAL DATA

Outlet for the oil:

The Illinois Pipe Line Co. (Ohio Oil Co.) is taking all oil.



(Maps appearing on pages 76, 79 and 82 by Mid-Continent Map Co.)

All Kinds of Drilling Equipment Used in Illinois Basin Fields

In order to give any consideration to the drilling conditions and problems accompanying the present active development program throughout the Illinois Basin, it is necessary to quickly divide the wells being drilled into at least four types. The widely varying geological conditions and producing depths over this 7,000,000-acre basin makes it impossible to consider the area as a whole. The first group should include the 3,000-foot holes being drilled to the Ste. Genevieve lime in proven areas, deepest producing level in the basin at this time, notably productive in the Clay City and Noble fields; most of the wildcat wells have this as their final objective. The second group of wells may include the 1,500-foot production from the Benoist sand (Chester series), now productive in the Patoka field, but a likely prospect for wildcatting. Third, the 900- to 1,000-foot wells such as have been and are being drilled in the shallow Bartelso field. In the fourth group, distinctly wildcat wells being drilled to test outpost blocks should be included.

The prevailing drilling conditions, problems, details of well construction and completion, and types of rigs being used in each of the four groups will be discussed separately.

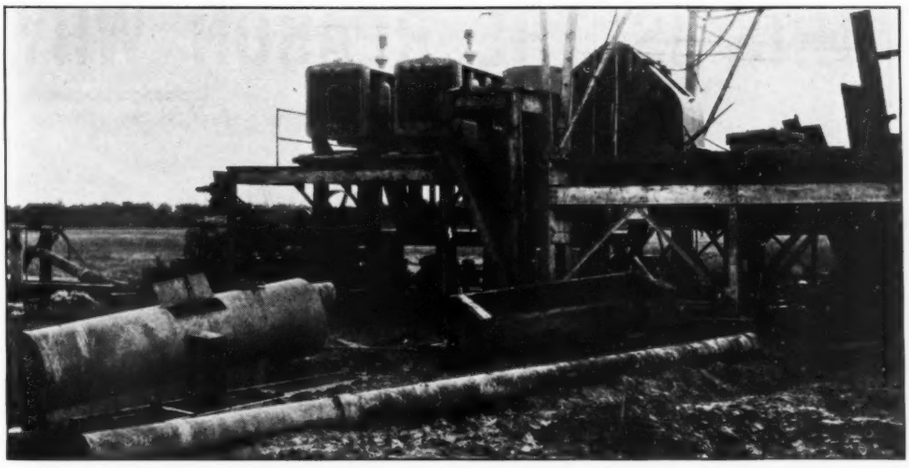
Deep Wells in Proven Areas

Briefly, such 3,000-foot wells in the Noble and Clay City fields are drilled through relatively hard formations and require rock bits from the surface down; no especially difficult problems are presented to the drillers, once they become familiar with local conditions and formations. Available fuel and water supply dictates to a large extent the type of drilling rig to use.

Those contractors working for companies already in production, and who have sufficient gas from their separators, and an established reliable supply of water, can use gas-fired boilers for their light-duty portable steam rotaries. Some few boilers have been fired with crude oil in these proven areas, but not nearly so many as in the outpost or wildcat drilling. Several combination rigs, using steam for slush pumps and gasoline or diesel engines for running the table and hoist, are seen.

A typical Clay City or Noble field steam portable rotary outfit includes the 11 by 11 drilling engine, 5½-inch drawworks, three 72-horsepower boilers, one 14- by 7¼- by 14-inch slush pump with usually a 12- by 6½- by 12-inch pump as standby, three-sheave traveling block, and five-sheave crown block. About 200 pounds steam pressure is carried. Steam traps are in wide use because of the large condensate present in the 3-inch lines commonly used under such conditions.

The shortage or uncertainity of a reliable water supply has done a great deal to prompt the wide use of diesel or gasoline engine powered portable rotaries in this development. The fuel problem is also solved by the use of such units. Only from 40 to 50 bbls. of water per day is required for drilling fluid in this area, and it can be trucked in if necessary. Water wells above 250 feet will supply this requirement, except in the severe dry seasons. Water rights on all streams in this vicinity are under lease, and water costs add materially to drilling costs when purchased under prevailing prices. This source of water is not always available to outside purchasers.



Rigging up at a diesel-powered portable drilling rig in the Noble field

The diesel engines range in size from 125 to 225 horsepower on rigs being employed there now. In all of the types of engines driving portable rotaries, both units are compounded so that they can both run the pump or the hoist together or separately. Drive from the engine, or engines, to the slush pump is usually through V-belt transmission to the circulating plant at the edge of the pit.

Diesel-Powered Rigs

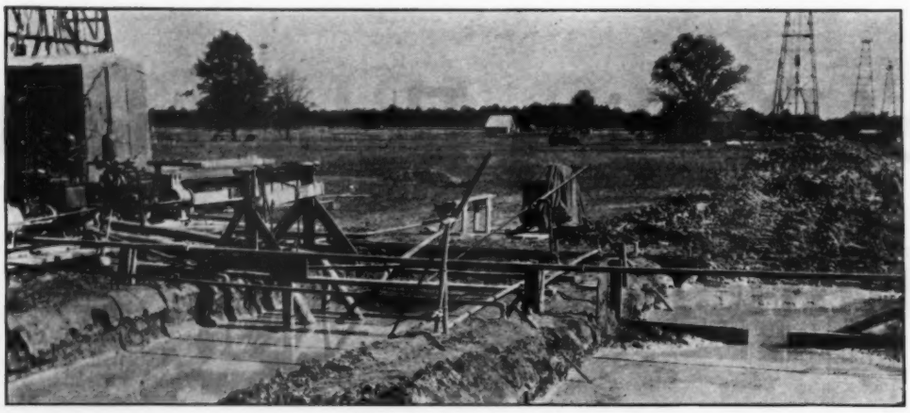
Some of the heavier diesel rigs, employing the two 225-horsepower engines, are capable of going as deep as 7,500 feet, and were moved into the field in anticipation of deeper drilling throughout the basin in the not far distant future.

Rock bits are used from the surface down. An average of 15 are required per well, five through the first 1,500 feet and 10 through the lower half of the hole. Well sizes vary slightly, but the majority of wells are drilled with 13½-inch hole to about 250 feet where surface pipe is set and cemented. A 9-inch hole is cut to top of the producing sand, where 7-inch casing is set and cemented. Generally, 4-inch drill pipe is used. A drilling collar of from 15 to 30 feet is common practice, and in some cases bit reamers are used, depending upon the individual wishes of the contractor or operator.

The alignment or type of formations penetrated are generally favorable to the drilling of straight holes. Deviation tests are made every 500 feet, but very little trouble has been reported from crooked-hole drilling.

Largely for this reason, extremely heavy bit weights are common in the Clay City and Noble field drilling. Normally the table is rotated from 90 to 115 r.p.m. and a weight up to from 12 to 15

Scene in the town lot drilling at Patoka. Note the open-chain type rotary drawworks



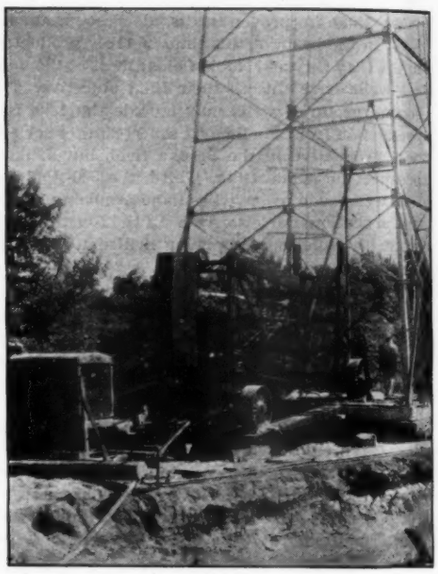
Stage settling is used in some of the mud pits in the new Illinois fields. Jetting type mud guns are used to remove the abrasive cuttings after they have settled to bottom of the pits

points is carried on the 7-inch bit. After being assured that the stem is rotating in tension, some successful drillers place almost the entire remaining weight on the bit while drilling. This change from early practice has contributed to an important extent in the reduction of rotary drilling time.

Mud-Laden Fluids

The handling of drilling fluid for rotary holes presents no real problem when done in the light of all experience gained to date in the area. With the water supply often scarce or uncertain, there has been the tendency at times to conserve on new water added to the mud, with resulting difficulties.

There are several heavy salt water sands which must be drilled above the producing level, and caving formations are penetrated from about 2,000 feet down. Relatively small but consistent quantities of commercial mud have been found desirable and economical throughout the entire hole. An average weight of about 10½ pounds per gallon, 38 viscosity, is standard mud practice among the majority of operators. Such a fluid provides sufficient wall strength for the prevailing conditions, and at the same time allows rapid settling of abrasive sand and slate particles in the settling pit before reintroduction into the hole. During some early drilling, very rapid wear of pump liners and tool joints resulted from the presence of these harmful components of the drilling fluid.



Portable cable-tool spudder, endless belt driven by gasoline motor, as rigged up at a Clay City well for completion with standard tools as is done in other fields

Experience is leading many contractors to construct special types of mud pits which will be conducive to the more complete settling of these particles in the settling pit or troughs. Some route the fluid through narrow ditches for as much as 100 feet from the settling pit to the reserve pit. Others place wooden "V's" in the settling pit between the discharge point from the well and the path to the reserve pit.

Jetting type mud guns are common at all rigs. They are used both for keeping the mud "live" and in proper condition, and also to jet out the abrasive sands and slates that have settled in the bottom of the settling pit, from time to time as required.

Costs

Drilling costs of early wells have been materially reduced to date, largely because of a reduction in drilling time, which has been occasioned by increasing experience in these proven areas. Drilling time for such rotary holes has

THIS IS THE REASON WHY

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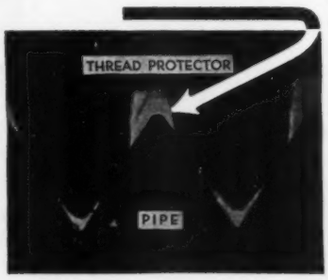

Unretouched Photo of Wedge Thread thru Carl Zeiss Toolmakers' Microscope

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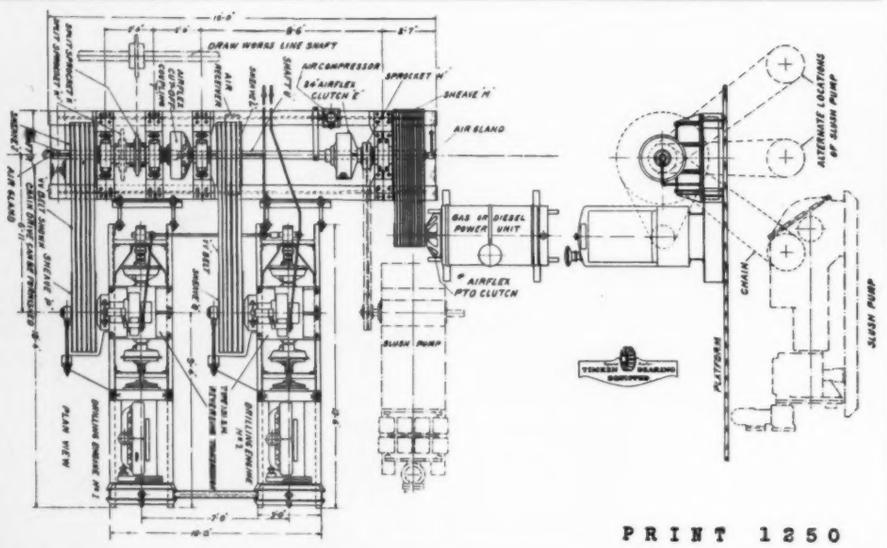
YOUNG UNIVERSAL JACK-SHAFT

FOR ALL STANDARD ROTARY DRAW-WORKS

• 3000 to 7000-FOOT DRILLING CAPACITY •



PRINT 1250

1. The Universal Jack Shaft Assembly is so constructed that power from one or more Gas or Diesel multiple cylinder Engines can be utilized to operate the draw works and furnish power for one or two slush pumps which can be located at either side of the drilling rig by turning the Jack Shaft end for end. The Jack Shaft can be incorporated either in the draw works assembly, or mounted on a heavy welded 12" "H" beam skid base which is then placed between the draw works and the engine as shown on Print 1250. This Unit is so constructed that various combinations of engine sizes can be used totaling 550 H.P. or more. The advantage of this plan is that use can be made of two Standard or Twin Motored Drilling Engines with Reversing Transmission and Reduction Gear, the same as used on cable tool work expect that the belt pulleys would be replaced by chain sprockets and connected by chains to the driven sprockets "J" and "L" on Jack Shaft. A "VV" Belt Drive as shown on Print 1250 may be used in place of the chain drive. The speed of the Jack Shaft is 385 R.P.M. at top engine speed.

2. The Jack Shaft with two Engines makes a compact Unit which requires a floor space of 18 x 19 ft. As the Units are all self-contained, no one Unit weighing over 10,000 pounds, they are easily and cheaply moved and quickly reassembled.

3. For rotating the table, power from No. 1 Engine is applied to the draw works lineshaft, at the same time the other engines can drive the slush pumps at any desired speed IRRESPECTIVE of the speed of the No. 1 Engine driving the rotary table. The power from either one or all engines can be applied to slush pump by engaging clutch "T." For example, normally No. 1 Engine will be operating the rotary table; while No. 2 Engine is driving the slush pump through friction clutch "E," then if additional power is required, an auxiliary Power Unit may be used as described in paragraph VII. Since power from two or three engines is available, this Jack Shaft provides the reliability and flexibility so necessary in rotary drilling, as power from any engine can be applied either to draw works or slush pump singly or together.

4. The Universal Jack Shaft consists of shaft "R" supported by two Timken Self-aligning B & S Bearings. On Shaft "R" is the driven sprocket or sheave "J", also the draw works drive sprocket "K", space is provided on shaft "R" so that a second sprocket "K-1" may be installed if wanted. On the inner end of this shaft "R" is the 24" Airflex Friction Cut-off Coupling Clutch "T" which connects shaft "R" and shaft "U" when compounding.

5. Shaft "U" carries the driven sprocket or sheave "L", also 24" Airflex Clutch "E" on extended hub of which is sprocket "H" to drive slush pump. Both Airflex Clutches "T" and "E" are operated by air valves from the driller's position on the derrick floor.

6. Air is provided by a small Belt-driven Air Compressor mounted on the frame. One of the 8" pipe cross members of the skid base is used for an Air Receiver.

7. If more power is required to drive the slush pump than one engine will provide, then additional power from an auxiliary Gas or Diesel Power Unit can be applied to the Jack Shaft through a suitable Multiple "VV" Belt Drive. This auxiliary Power Unit may be placed next to Engine No. 2, parallel to the Jack Shaft, or on opposite side of the Jack Shaft. This arrangement works out very well especially if the engines are set on a sub-structure with slush pumps under floor on ground level.

YOUNG ENGINE CORPORATION
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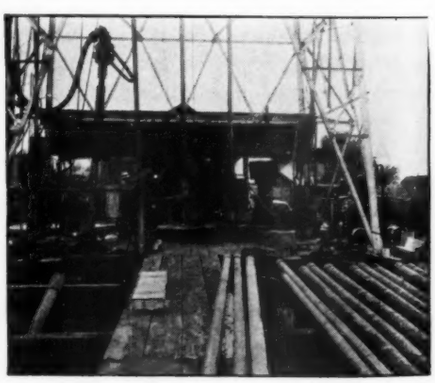
dropped from four to five weeks to the standard "on and off" time of about 15 days at present. Where a well appears to be running low on upper markers, more time is usually consumed in carefully approaching the irregular and lenticularly occurring producing section. The Pure Oil Co., largest operator in these fields, is running five company owned rigs at present. They are also contracting a large amount of their drilling. Practically all other operators are contracting their

Cable-tool spudder as used in the 900-foot drilling in the Bartelso field

development. Prevailing prices per foot vary from $4.50 to $6.00, depending upon the materials of construction which are furnished by the contractor or the operating company. Total costs of drilling, equipping, and completing these wells now average close to $22,000.00.

Completion Practices

Due to the lenticular occurrence of the Oolitic pay section in both the Noble and Clay City fields, almost all operators prefer to standardize their drilling tools before drilling in. The low pressure of the saturated section also makes this desirable. Some are drilled in with rotary tools, however, where upper markers indicate that the well is running close to expectations. The fact



On this rig, crude oil-fired boilers are used to run the slush pump with steam, and the table and hoist is run with one 150-horsepower gasoline motor

that a particular well is running somewhat low does not immediately condemn its productive possibilities, but under such conditions it is considered very important to standardize and carefully drill in search of the lenticular beds. The spudder type cable tool rig, usually mounted on wheels, powered by gasoline or diesel engines, is moved in for completion purposes. Some skid the rotary derrick away before moving in spudder, while

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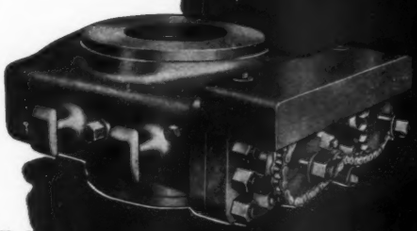

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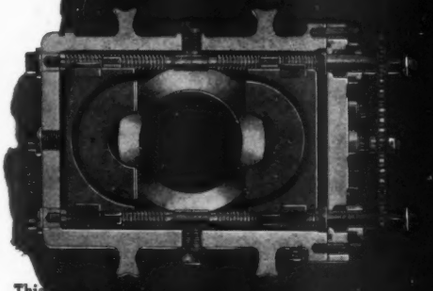

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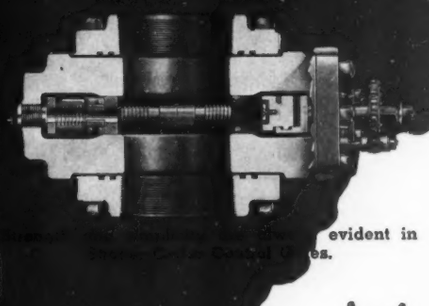

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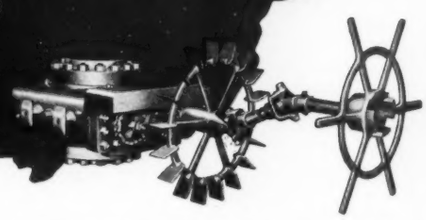

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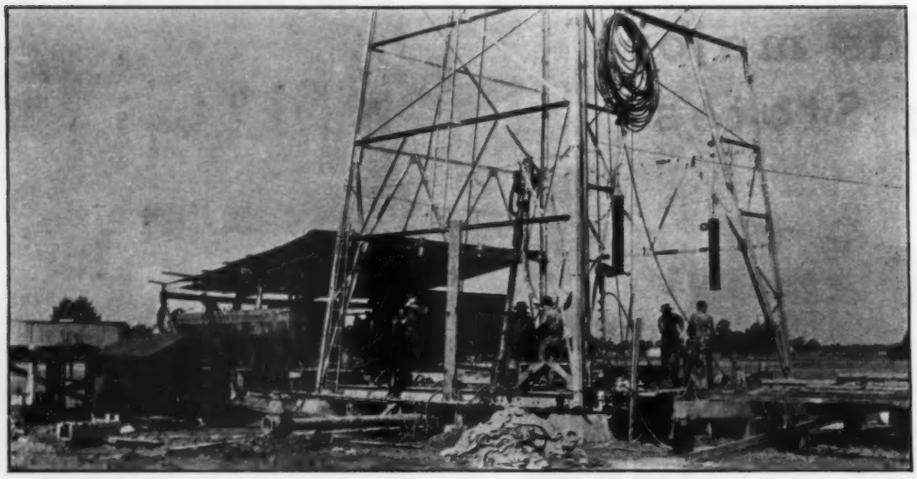

Drilling well in the Clay City pool

Gasoline-engine-driven Unit at Clay City, Illinois

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others use the derrick for the completion with cable tools.

A few wells have been experimentally completed with oil as a drilling fluid, but largely due to the irregular occurrence of the pay zone, this practice has not been extended.

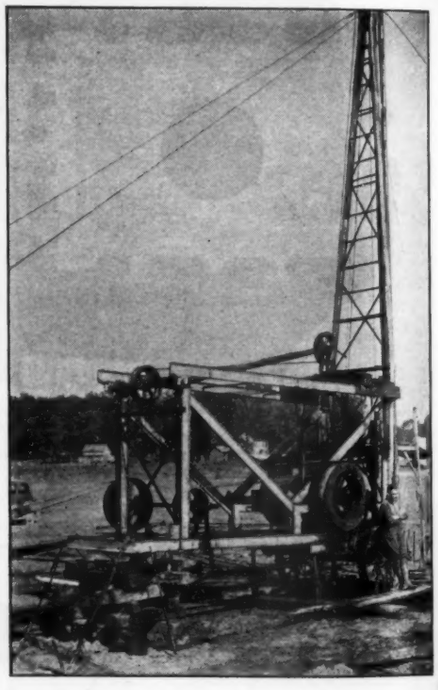
Well-head connections are seldom installed until the production string is cemented, and sometimes not then. It is not uncommon to see the mud returns running out from under the derrick through a ditch to the pit, after it "slops over" the open surface pipe.

Patoka Field

Producing from the shallow depth of about 1,400 feet in the Benoist sand, the Patoka field of Marion County presents a somewhat different set of drilling conditions.

Early wells here were drilled and completed with cable tools. Small, very light-duty rotaries have since become almost standard. Due to the entire absence of gas in this field, drilling fuel is a problem. The diesel or gasoline operated units are most common. However, steam has been used and is being used at several wells, with crude oil, coal or wood as boiler fuel.

After setting short lengths of surface pipe, a 9-inch hole is cut with rock bits (requiring about five per hole) to top of the producing section. In all cases here, rotary outfits are moved off, derrick skidded, and portable cable tool spudders are moved in for drilling of the sand, and completion



Portable spudder, belt driven from portable gasoline engine, being used to complete a well in the Patoka field

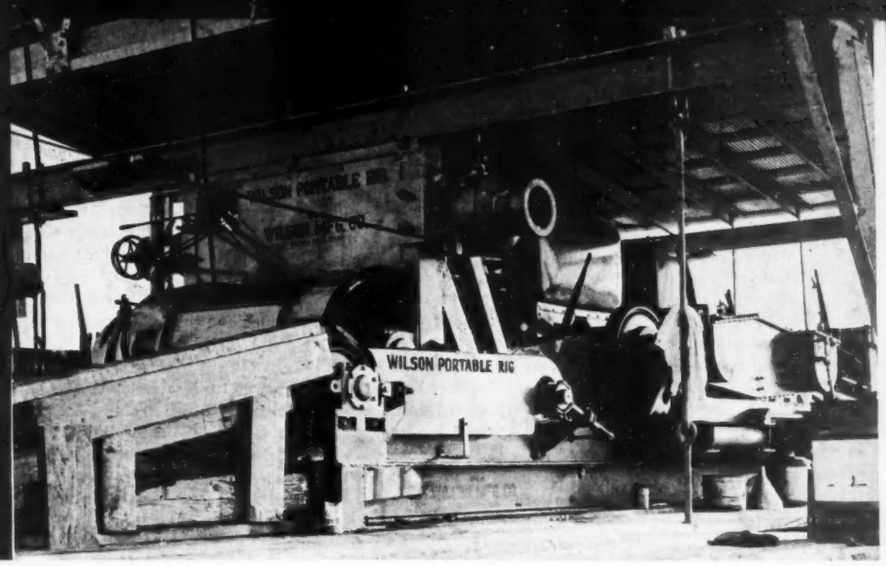
of the well. The 7-inch producing string, in the majority of cases, has been cemented to the top, requiring about 300 sacks. This is done to protect the string from corrosion occurring in the several salt water sands which are sealed off.

About four days are required for rotary drilling to the top of the sand, and about two days for completion with cable tools.

Fresh Water Problem

The fresh water problem is acute at Patoka. Adams Oil & Gas Co., the largest producer and driller in the field, has a water system from a nearby stream, but that sometimes runs dry during certain seasons of the year.

(Continued on Page 94)



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Whether for 3,500 . . 6,000 . . 8,000 . . or 10,000 ft. depths there is a Wilson Portable Rig that will do the job with the power, speed and durability of rigs costing 3 times more!

Here are a few of the outstanding features found on every Wilson Rig:

Wilson Chain Drive Transmission which transmits 35% more power to point of action; New, improved Master Clutch; Circulating Type Water Cooled Steel Brake Rings on Giant, Atlas and Titan models. Water Splash Type Steel Brake Rings on Mogul model. Arranged for Parkersburg Hydromatic Brake as standard equipment (Titan and Atlas models only). Dual Engines with Oil Bath Chain Connecting Drive; Friction and Jaw Clutch on Drum final drive. Units are constructed so as to be broken down into units less than 8 ft. road width.

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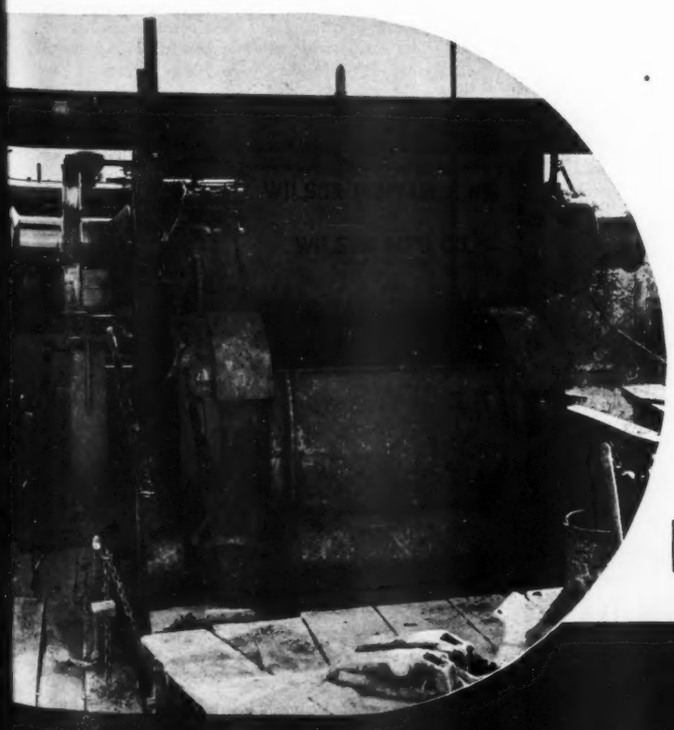
Below: Wilson Mogul Model Rig operating near Noble, Illinois. The rig is owned by the Lupher Drilling Co.



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The completions of wells in this field almost always include the shooting of the sand with from 5 to 15 quarts of nitroglycerin after 7-inch pipe has been set. Extreme care must be made to not damage the casing by shooting with too large a shot or too near the pipe. Difficult fishing jobs have resulted from this mistake, and one or more holes have been lost in this manner. The Benoist sand, being a relatively pure sandstone, has responded very successfully to shooting, and initial productions are often greatly increased by the practice. Liners are set in most wells after shooting.

Bartelso Field

About 60 miles east of St. Louis, the Bartelso field was discovered in late 1936, at a depth of about 950 feet. Although this field is not actually considered a part of the new boom activity because of its shallow depth, some drilling continues there, and the possibilities of finding new similar fields in this same horizon is considered favorable. At present there are 16 producing wells in the field, and three drilling wells. All Bartelso drilling has been done with portable cable tool spudders. Some have used gasoline or fuel oil, and others have been steam driven with coal from nearby mines as boiler fuel. Only the very lightest type of portable cable tool drilling rig is needed to this depth.

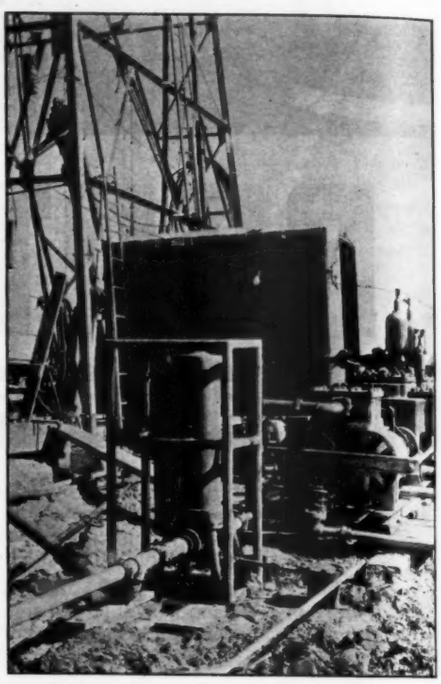
Wildcat Drilling

Several basic considerations govern the selection of proper drilling rigs for the drilling of test wells on wildcat blocks throughout this extensive area. The availability of fuel and water, proposed depth, and the extent of detailed geological information desired are important factors.

Cable tools have been widely used on basin wildcats, but the use of small rotaries is increasing. These vary from the crude type of "junk" outfits to the thoroughly modern portable units.

In rotary work conditions do not vary greatly from those encountered in the proven areas. Of course, progress is slower in outpost locations as more care is taken in logging the formations penetrated.

Actually, more real problems are presented to the cable tool than the rotary tool drillers in these basin wildcats. The cavey shales below about 2,000 feet are troublesome, and it has been necessary to "carry the casing" with the tools through rather



Steam traps are common on the 3-inch low-pressure steam lines. Here one is shown on one of the few gas-fired steam rotary units in Clay City field

thick sections. Also, the original hole must be started sufficiently large to permit running of unexpected strings of casing when required. Commercial mud has been used successfully on several cable tool wells to permit carrying strings of casing to the desired point under troublesome conditions through the caving section. Some strings have required mudding as many as three times before reaching the desired casing point. It is also thought that full mudding of all strings will result in greater casing recovery. The presence of many salt water sands with a full head of water in each, also requires that the casing be carried in order to be sure that no low pressure saturated zones are passed up. The practice of carrying the casing, and keeping it well mudded, adds somewhat to the cable tool drilling cost, but has proven its worth in all instances.

Small central power house in the 900-foot Bartelso field, discovered in late 1936

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THE NEW STAR 244 is especially built for drilling-in and clean-out work for wells up to 3500 feet. It has a fast drilling motion that drills fast and handles fishing jobs efficiently—it has ample capacity reels, chain-driven, with three speeds—and brakes that hold.

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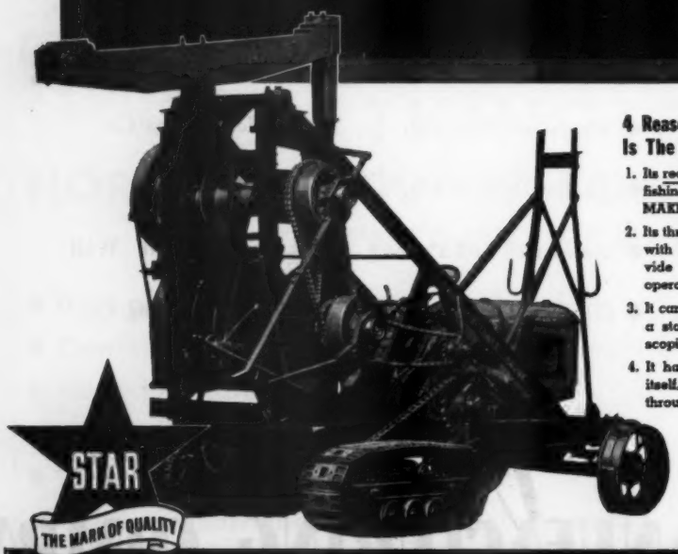

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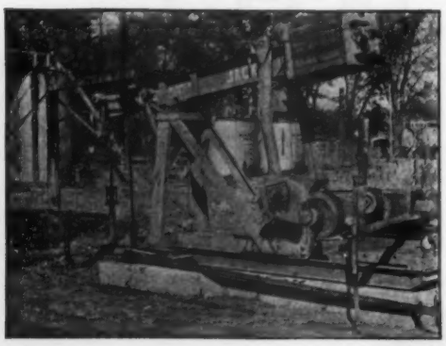
Pumping Wells Play Important Role in Illinois Production

"While the new area appears large and boom conditions now prevail, we should not lose sight of the fact that this is another Illinois field. It should not be measured by Mid-Continent standards. The old fields of Illinois have made their



Pumping jack in the townsite area of the Patoka field. Note the 3½-horsepower gasoline engine pumping the oil well and also the shallow water well nearby

production from small, long-lived, pumping wells. The same will be true in the new fields, 30 miles away." Here, in a few words, Theron Wasson, chief geologist for Pure Oil Co., summed up the future producing conditions of the new Illinois fields in his paper before the oil and gas division of the fifth annual Illinois Minerals Industries Conference in Urbana on October 9, entitled "Oil Exploration in the Eastern Portion of the Illinois Basin."

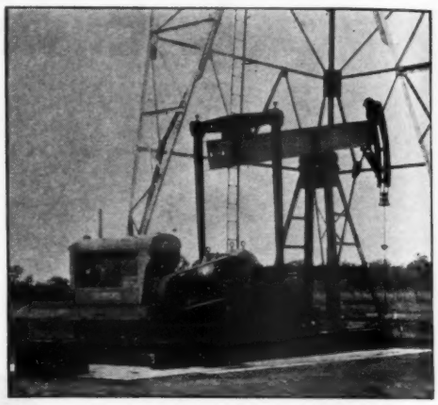
Considering first the Clay City and Noble fields of Wayne, Clay and Richland counties, where the great portion of new production has been developed to date. Production is from the oolitic limestone section of the Ste. Genevieve (upper part of the Lower Mississippian). Locally this oolitic zone is termed the McClosky, a carry-over from the farm name upon which the discovery well was drilled into this corresponding horizon in the nearby Bridgeport field of Lawrence County over 25 years ago.

Average total thickness of the Ste. Genevieve is about 125 feet, although some wells that drilled entirely through it logged a section as thick as 230 feet. The oolitic sections occur in varying thicknesses in or near the top of the Ste. Genevieve. Beds of porous oolites vary from 3 to 15 feet in thickness, with an average of 8 to 10 feet, at depths varying from 2,850 to 3,150 feet. The actual effective porosity of this zone, and its thickness, governs to a very large extent the initial flow of wells and its flowing life, and indicates the recoverable reserve. The general yardstick of 200 bbls. per day initial production for each foot of porous oolites is used in estimating initial productions. The clean Ste. Genevieve oolites give up their oil freely, and a very high percentage of recovery per acre foot may be expected.

Production Spotty

As is characteristic of other important limestone reservoirs in other sections of the country, sufficient effective porosity or permeability is often lacking within the saturated section to yield commercial production. Already dry holes have been drilled offsetting big producers in two or more directions. These bone-dry holes are favorably located on structure, but lack the all important benefit of an effective or interconnected porosity. Generally, the oolitic deposits occupy an irregular and lenticular position in Ste. Genevieve, and it has been penetrated at widely varying depths within a small area.

In comparing the McClosky limestone in the newly opened Clay City and Noble fields with the same producing zone in the Bridgeport field, it can be said that it is more uniform and carries a greater percentage of pore space in the new areas. Also,

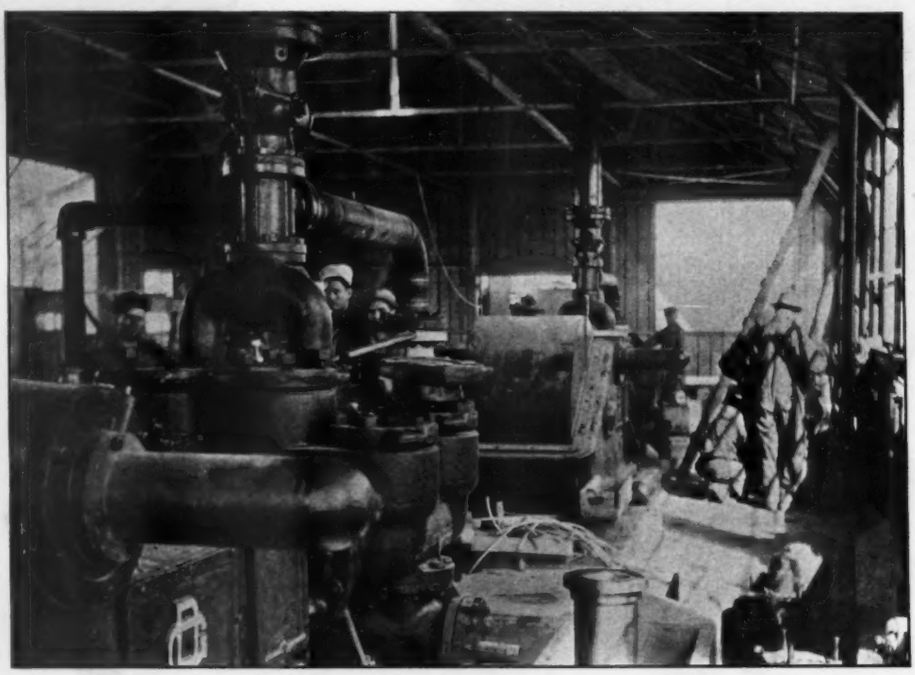


Gasoline-powered, V-belt driven, portable pumping unit in the Noble field of Illinois

the areal continuation of the oolites in Clay City and Noble fields has already been proven to be much wider in this deeper portion of the basin.

From experience gained in the older McClosky lime fields, it is known that decline during the first few months of production will be rapid, and flowing life will be short. Although some flashy flowing productions occur when the drill penetrates a good section of porous oolites, the Illinois fields should be considered and evaluated as a pumping area with low daily volumes per well and long pumping life, either by the use of light portable beam outfits or central powers.

The decline in flowing rates is at present perhaps being accelerated by the universal method of flowing wells through open 2½-inch tubing without proration restrictions. Few actual figures on individual well declines are now available, but the discovery well in the Noble field offers a representative example. Here initial production was 1,600 bbls. by flowing, and a 75 per cent decline was suffered in the first five days of production, or to 400



Interior view of Pure Oil Co.'s 400-horsepower initial pipe line station at Noble, Ill., serving its new 8-inch line recently completed from that point to Martinsville, Ill., where it connects with the Illinois Pipe Line Co. system

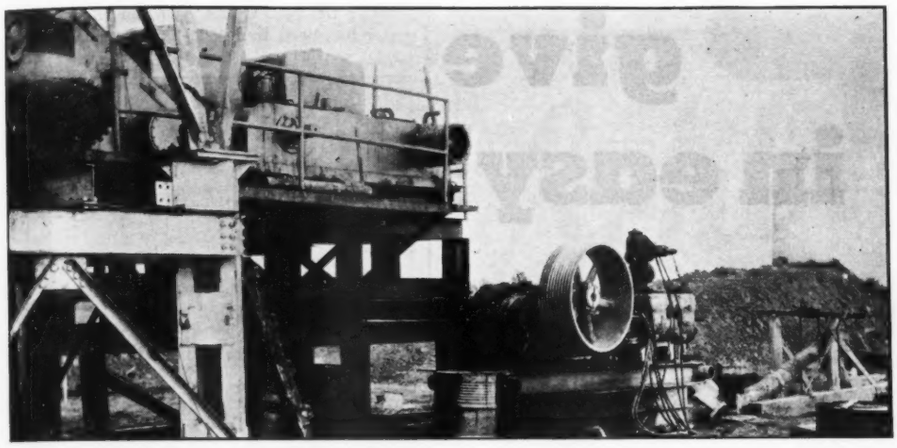
bbls. per day. From that point the decline has been rather well sustained, but a small steady decline is apparent. Undoubtedly, a far greater portion of each well's ultimate recovery will be obtained during its long pumping life than by flowing.

Commercial acid was not used in early McClosky limestone wells, but acidizing is fast becoming standard completion practice. Also, most operators are going back into the older producers and applying stage treatments of acid. This particular limestone has not been altered or dolomitized to any appreciable extent, and it dissolves readily in diluted hydrochloric acid.

Tank battery situated in a typical Illinois setting

Gas-Oil Ratios

Relatively low gas-oil ratios exist both at Noble and Clay City, but there are sufficient quantities of gas to justify running production through separators. This gas is used for drilling or operating the small pumping engines. Pure Oil Co., which owns the bulk of production in the area, is now completing a 400-hp. gas engine drive pipe line station just east of Noble and will supply its fuel needs from their gas system.



Rigging up in the Noble field. Note that the slush pump is set on steel foundation and V-belt driven from diesel engine on derrick floor. This is one of the largest rigs in the field

Elevated separators are widely used, especially by the Pure Oil Co., permitting the minimum pressure of about 20 pounds to be carried at all times at the trap. On leases of more than one well, two separators are set on elevated platforms near the tank battery. One separator is used for handling of an individual well during gauging period, and the other for production from all other wells on the lease. Such individual well gauges at regular intervals are made in order to have full operating data on each well.

Pressures

Bottom-hole pressures are not being taken in a systematic manner in either of these two fields, because they vary so widely from well to well according to the porosity and thickness of the McClosky. Rather accurate records of casing and tubing pressures are maintained on flowing wells, however. In the Clay City field these average about 150 pounds tubing pressure and 250 pounds casing pressure, while in Noble they are slightly less on the average. In the recent northeastern extension

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Information About Lawrenceville That Will Interest You

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Lawrenceville is the county seat of Lawrence County, Illinois, on the main line of the Baltimore and Ohio Railroad and the Cario Division of the Big Four, which is part of the New York Central lines. The population of Lawrenceville is approximately 7,000, of Lawrence County, 25,000 (1930). Lawrence County has been the oil center of Illinois and Indiana for 30 years. Other natural resources are sand, gravel, clay, shale and coal. Lawrenceville is on United States Highway No. 50 (Illinois Route 12) and also on Route No. 1, providing excellent roads, north, south, east and west, to all locations in the oil fields of Illinois and Indiana. Lawrenceville has an unlimited water supply obtained from artesian wells, furnishing ample water for domestic, industrial and fire protection purposes. Light, Power and Gas to supply any demand. The business district consists of about 60 firms representing all types of business including a daily and weekly newspaper. The largest industry is the Indian Refining Company, a twenty million dollar organization. Lawrenceville has three grade schools and one junior high school, in addition to a Township high school. These schools rank with the best. Lawrenceville has nine churches. The township library, with an excellent librarian in charge, has a large number of up-to-date books. There is a country club with golf, tennis and club house facilities. Other recreational facilities are an excellent lake six miles east of the city, with boating, bathing, fishing, picnicking, dancing, cottages and other facilities; a two acre park located within the city limits providing playground equipment, wading pool and shelter house; a flying field eight miles from heart of the city.

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NAW— I don't give in easy!

Photo courtesy of "Old Slatts—the Dynamiter"

AND...when that Sievers peddler comes sidlin' up to me on the rig and started talkin' reamers—boy, did I land on him all sprawled out! Becuz, yuh see, I didn't believe in reamin'—had too much grief with reamers holdin' up the bit, doin' no good, and raisin' the devil generally.

But yuh know that peddler was a sticker, and he didn't scare worth a hoot. Acted like a man who knew he had a reamer that a feller could run in the hole and do a job and haul 'er out again all in one piece . . .

So, I give in and let him send one out and we run 'er behind the bit in some of the hardest, toughest shale a driller ever cussed about. And, brother, she wuz a darb! Smoothed up the runnin' of that bit plenty—didn't hold 'er back at all—and when we come to set casin' you couldn't find a tight spot all the way down.

Sold? Sure I'm sold. So's all the boys on the rig, and if that feller from Sievers comes around wantin' to talk reamin' you better knock off and listen to him.

Yeah, I'm tellin' yuh—he's got somethin' there!

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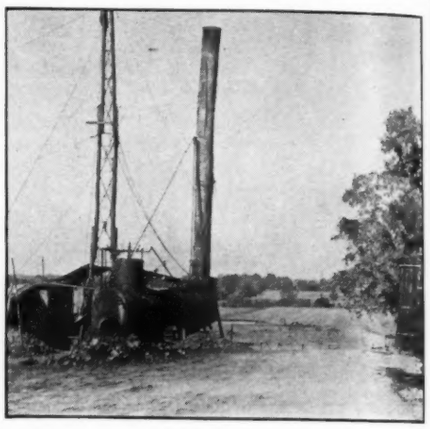
SIEVERS REAMERS

at Noble, a thicker section of porous oolites was taken, and casing pressure was 450 pounds, tubing pressure 250 pounds. At any rate, the relatively low pressures confirm the prediction that these fields will be pumping at an early date. Small pumpers have been completed offsetting large flowing wells, because of a thinning out of the section, a reduction in the effective pore space, and an accompanying drop in pressure.

No active water drive has been indicated from present development, and it is thought that the reservoir is under volumetric control. Whether or not the varying lenticular beds of porous oolites are interconnected throughout a wide area is yet to be determined from the study and comparison of individual well performances.

Water

Several Clay City wells have been drilled through the porous McClosky, and no bottom-hole water has been found. Relatively small showings



Field scene in the shallow Bartelso field of southwestern Illinois. Note the boiler serving the cable-tool spudder, which is fired with coal

of salt water have been reported on some west edge wells, but its source is not yet fully determined. Nothing reliable is known at this time regarding a possible water level in either field. Due to the lensing deposition of the porous oolites, water levels will probably always be poorly defined.

Pumping Conditions

Factors which are having an important bearing upon the selection of pumping equipment for these fields may be summarized as follows: (1) From experience gained in other similar fields, it is known that the McClosky lime wells decline to small daily volumes and have a very long pumping life. The Bridgeport field is now over 30 years old. (2) Bottom-hole water has not been had in any of the wells to date, and edge water will probably not be excessive. It seems safe to assume that the required volumes of water to be handled will be small over the life of the entire field. (3) Production will probably never be restricted on the settled pumping wells, so the possibility of proration need not enter the picture. (4) Saturated lime thickness and density of well spacing have a direct bearing on the recoverable oil at each well location, and should be considered in the selection of proper lifting equipment. (5) Availability of a long-term supply of fuel and water deserve careful consideration. (6) Weather conditions must be considered in the selection of pumping power and type of units. Temperatures as low as 20 below zero may be expected in this area during severe seasons.

At present there are about 70 producers in Clay City and 20 in Noble. Most of them have undergone rapid decline during their short flowing life, and have either been or are going on the pump in fast succession. There are now three central powers in

the process of completion in the Clay City field, one by Wiser Oil & Gas Co., and two by the Pure Oil Co. Portable gasoline engines operating beam pumping units have been used in the field up to the completion of the central powers. Those wells which did not encounter such a thick or porous bed of Oolitic lime as their flowing offsets were put to pumping by such units upon completion. The present rush to install powers and pumping jacks is to prevent any loss of production from wells which are exhibiting rapid declines in flowing rates.

One of the powers being installed is the bandwheel type, 24-inch face by 24-foot diameter, roller bearing throughout, with enclosed lubrication system. It will be driven by 75 hp. gas engine by endless belt. The geared powers are of the double reduction type, V-belt driven from gas engine. The relatively shallow depths and small settled volumes to be lifted make these fields particularly favorable to the use of central powers, and eventually all wells will probably be pumped in this manner.

Due to the severe weather conditions, it may prove desirable to pump the wells at a continuous rate throughout the 24-hour period rather than attempting to pump them off and operate on intermittent pumping time. Any shutdown will permit rapid accumulation of paraffin, and make engine starting somewhat difficult.

All flowing wells are equipped with 2½-inch tubing and this will probably be continued in use as wells are put to pumping. Barrel sizes may have to be reduced on some wells to permit continuous pumping, especially during the winter months. Due to the shallow depth, light-gravity oil, and straight holes in the field, polish rod loads will not present any unusual strain on the sucker-rods. Some evidence of sulfide corrosion has been noted, and it is the growing practice to use sucker-rod metals designed to resist this action.

The absence of water in both Clay City and Noble fields has permitted running the production direct to separator and stock tanks without any treatment for emulsions.

All wells in this field are put to pumping upon completion. They average about 40 bbls. per well per day, but experience from other Benoist sand fields indicates that Patoka wells will probably decline to small volumes and have a relatively long life and good recovery. Some bottom-hole water has appeared in this reservoir, and considerable water will have to be lifted during this field's life. Gravitational means of separation are successful in the summer months, and the field has not yet undergone its first winter of operation.

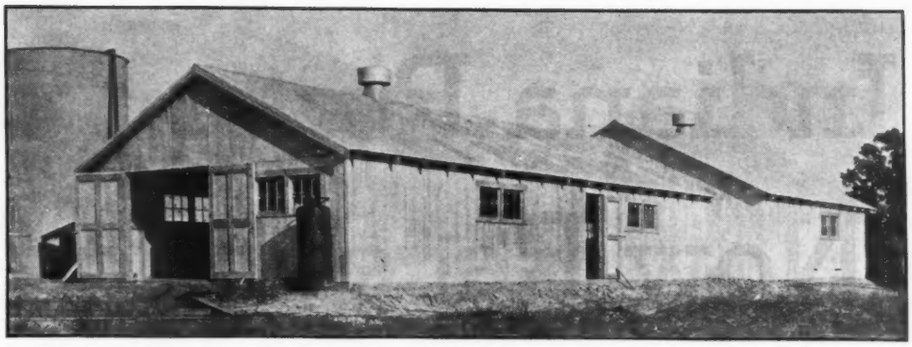
Two-inch tubing is universally used in pumping wells, with five-eighths inch rods. The entire absence of gas here has made the small gasoline engine on individual light duty beam pumping units standard. With proper counterbalancing, the very small 3-hp. gas engine has been found successful. Swing posts to nearby wells also pump nearby wells off these 3-hp. gasoline engines, when properly balanced.

A short stroke, ranging from 8 to 12 inches, has been found most desirable for continual pumping at about 24 strokes per minute. Common barrels are used throughout the field at present. Extreme winter conditions may require the use of small pumps to insure continual pumping operations if the daily volumes fall off to any extent.

Consideration has been, and is being, given to electrifying the Patoka field.

Taxation Committee Date

General Chairman F. B. Plank, Cities Service Oil Co., Bartlesville, and George W. Foster, Texas Co., Houston, have announced that the joint annual meeting of the standing committee on federal income and excise taxation and the standing committee on state and local taxation of the General Mid-Continent Oil & Gas Association, will be held at the Baker Hotel, Dallas, Tex., on Thursday and Friday, December 2 and 3.



Wells in the Clay City field are rapidly going on the pump. Here is shown the main building nearing completion for housing a gas engine-driven bandwheel power on the Wiser Oil & Gas Co. property at the north end of the field

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Indiana Portion of Basin Is Now Receiving Attention

By RALPH E. ESAREY
Indiana State Geologist

Increased activity upon the Indiana side of the Illinois-Indiana-Kentucky Coal Basin in recent months has resulted in the almost complete leasing of several counties and the partial leasing of all others in the basin. Prospecting and leasing has extended as far east as Crawford, Orange, Lawrence, Monroe and Owen counties, and north to Benton County. In excess of 2,000,000 acres are known to be under lease. A large number of tests are contemplated and several are already under way.

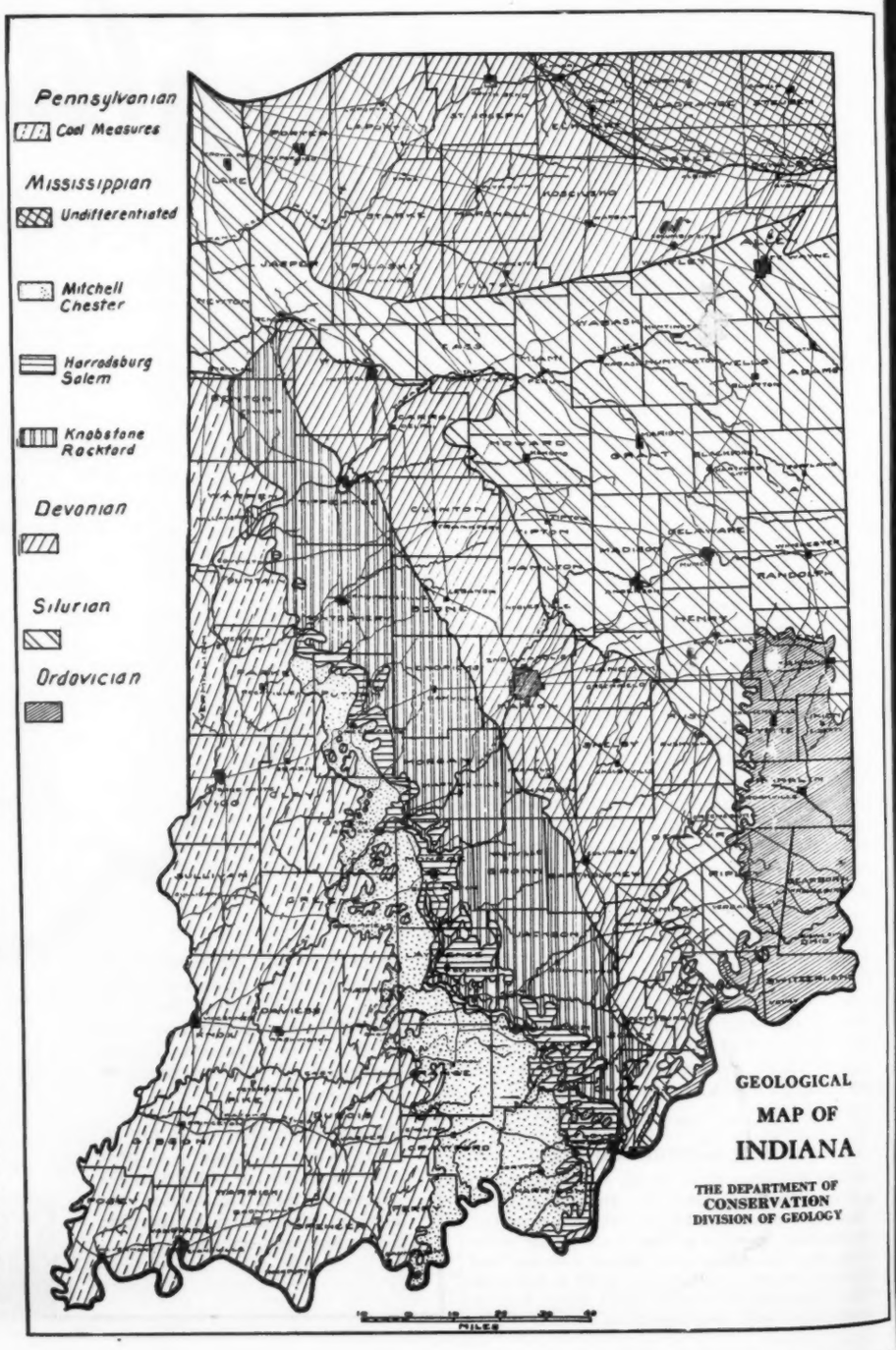
The first oil well drilled by a rotary rig in the state of Indiana was completed by the Carter Oil Co. on the Louisa Paddock farm in section 16, Township 10n, Range 10w, Vigo County, in August, 1937. Production was obtained from the Niagaran formation at a depth of 2,190 to 2,205 feet, in the Siosi sand as named from the nearby Siosi oil field. In this part of Indiana, three horizons near the Devonian-Silurian contact carry oil; the uppermost is correlated as the Devonian limestone, which lies immediately beneath the black shale, the second horizon is 60 to 80 feet beneath the Devonian shale, and the third is about 150 feet beneath the shale. The lower porous zones are considered to be Niagaran or Silurian in age. Structure was determined from core tests to a shallow coal and limestone. The production record of the near-by Siosi field makes the sand a promising horizon for future testing.

The state of Indiana lies partly within several of the major structural features of the midwest The northwestwardly trending limit of the Cincinnati arch, extending from Cincinnati to Logansport and Chicago, separates the state into two major divisions, with the formations on the south and west dipping gently into the Eastern Interior Coal Basin, and those on the north and east belonging to the Michigan Basin or composing the crest of the arch itself. The western branch of the arch dies out in the region of Chicago against the Wisconsin Uplift.

Southwestern Indiana, with which we are principally concerned, lies along the western flank of the Cincinnati arch and occupies the eastern portion of the coal basin. Glacial drift covers about five-sixths of the entire state, all except a triangular shaped section in the central southern part. The northern two-thirds of the state is definitely classified as glacial plains and the topography of the southeast and southwest portions has been greatly modified by glacial erosion. The unglaciated portion is an upland area, with local relief varying from 100 to 500 feet. Surface geology has been carefully determined and mapped in the southern third of the state, while the scarcity of outcrops in the glacial plains makes such mapping very difficult. The geologic map of the state shows the belts of outcrop of the various geologic formations in the southern part of the state as they have been exposed by truncation of the Cincinnati arch coupled with the regional dip into the Illinois-Indiana Coal Basin.

Surface formations in Indiana are all sedimentary rocks of Paleozoic age, ranging from the Trenton or Cynthiana of middle Ordovician in the southeast corner of the state to upper Pennsylvanian rocks in the southwest portion.

Ordovician rocks from Upper Trenton to late



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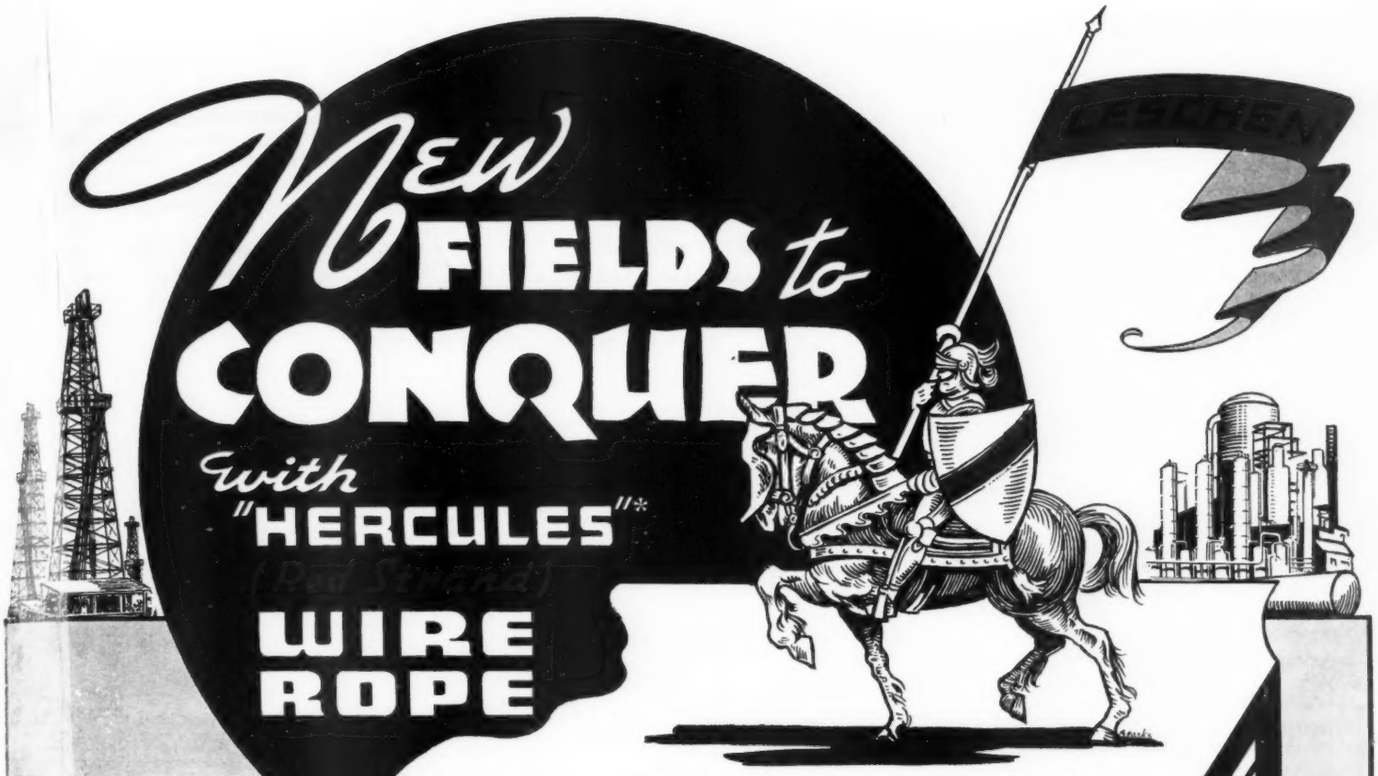

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Richmond age are exposed near the crest of the arch in southeastern and eastern Indiana extending as far north as Richmond in Wayne County. Surrounding the Ordovician outcrop are Silurian rocks occupying a belt about 10 miles in width in the southern part of the state and spreading out across the northwest limit of the arch to cover most of central eastern Indiana. Porous zones near the Silurian-Devonian contact, as previously mentioned, served as oil and gas reservoir rocks in several parts of the state.

Devonian formations parallel the Silurian outcrop from southeast to northwest across the central part of the state. The New Albany black shale, everywhere about 100 feet thick, combined with 50 to 60 feet of limestone, make up the entire Devonian section in Indiana. The Mississippian is represented by 1,300 to 1,400 feet of limestones, shales, and sandstones outcropping in a northwest-southeast belt, 40 miles or more in width, through the center of the state. The most productive oil-bearing rocks in the state are sandstone members of the Chester series of Upper Mississippian age. The Kirkwood, Benoist, etc., sands of Illinois are likewise of this age. The McClosky horizon is of Ste. Genevieve or St. Louis age of the Middle Mississippian. Probably a disconformity separates the Upper and Middle divisions of the Mississippian, which might mean that production from the McClosky "sand" has been trapped in topographic "highs" rather than structural "highs."

The greatest unconformity in the entire section of Paleozoic rocks occurs between the Pennsylvanian and Mississippian systems. The basal Pennsylvanian or Mansfield sandstone progressively overlaps the underlying formations down to and including the Borden group of Lower Mississippion age and probably even Upper Devonian. Relief along the unconformity may be as much as 150 feet in a distance of 1 mile. The Mansfield is known as the big water sand and may attain a thickness of 250 to 300 feet, often all pure sandstone. It serves as an oil sand at the West Princeton field, and in Posey, Vanderburg, and perhaps Sullivan counties. The Bridgeport and Flat Rock sands of Illinois are probably correlatives of the Mansfield.

The Pennsylvanian formations reach their greatest thickness in western Posey and Gibson counties along the Wabash River at the Illinois boundary, where well records show 1,700 to 1,800 feet of coal-bearing sediments, including the basal Mansfield. Several horizons in the Pennsylvanian are readily recognizable under normal conditions such as: Coal V, about 500 feet above the Mansfield sandstone and almost everywhere overlain by a black, sheety shale and a limestone; Coal IV, about 125 feet below Coal V, with its rider bed known as IVa which has a thin limestone and a black shale above it; Coal VI, which is 60 to 90 feet above Coal V; Coal VII, which is 30 to 60 feet above Coal VI; the Somerville or West Franklin limestone in two and sometimes three beds, normally about 300 feet above Coal V; the Friendsville group of limestone, black shale and coal; and the New Haven group of similar character. Stratigraphic work in the coal measures is difficult and must be carefully watched for divergencies and convergencies.

Structure in the Basin

Twenty-six counties in Indiana lie in the Eastern Interior (Illinois-Indiana-Kentucky) Coal Basin, proper. Southwestern Indiana lies along the eastern flank of the basin and constitutes about one-sixth of its total area. The regional dip from the Cincinnati arch averages near 30 feet per mile to the west, southwest, and northwest depending upon location around the rim of the basin. Few structural or sedimentary irregularities of importance interrupt the basinward dip of the strata. The Mt. Carmel Fault, just outside the basin in Mississippian rocks, is the largest of these and can be traced from northern Monroe County to central Washington County, a distance of 60

INDIANA GEOLOGICAL TIME SCALE

				Oil field names—
Quaternary	Pleistocene	Wisconsin Illinoian		
Tertiary	Pliocene	Lafayette		
PALEOZOIC — Pennsylvanian	Conemaugh	Wabash	Friendsville Fmn. Parker Fmn. Merom Ss. and Sh.	
		Shelburn	Ditney Fmn. Somerville or W. Franklin Ls. (Shale and Sandstone) Coal 8 Shale	
	Allegheniian	Petersburg	Coal 7 Millersburg Coal 6 Coal 5a Coal 5 Petersburg Coal 4a	
		Staunton	Coal 4 Linton Coal 3a Coal 3 Seelyville	
	Pottsvillian	Brazil	Coal 2 Minshall Coal Upper Block Coal Lower Block Coal Coal 1	Sullivan sand West Princeton sand Posey County sands Vanderburg County sands
		Mansfield	Mansfield Ss.	
Mississippian	Chesterian	Upper	Negli Creek Ls. Mount Pleasant Shale interval Bristow Ss. Siberia Ls. Wickliff Ss. Shale interval Tar Springs Ss.	Jet sand
		Middle	Glen Dean Ls. Hardinsburg Ss. Golconda Ls. Indian Springs Sh. Cypress Ss.	Jackson sand
		Lower	Beech Creek Ls. Elwren Ss. Reelsville Ls. Sample Ss. Beaver Bend Ls. Mooretown Ss. Paoli Ls.	Little Lime Barker sand Big Lime Oakland City sand Brown sand
	Meracecian	Ste. Genevieve	Fredonia Oolite	McClosky sand
		St. Louis.	St. Louis Ls.	
		Salem	Salem Ls.	
	Osagian	Warsaw	Harrodsburg Ls.	
		Keokuk	Edwardsville, Floyds Knob, Garwood, Locust Point — Borden or Knobstone	
		Burlington	New Providence Sh.	
	Kinderhookian	Kinderhook	Rockford Ls.	
Devonian	Upper Devonian	Genesee-Portage	New Albany Shale	
	Erian	Hamilton	Beechwood Ls., Silver Creek Ls. — Sellersburg	Devonian sand—Upper Siosi
		Onondaga	Jeffersonville Geneva Ls.?	
		Schoharie	Pendleton Ss.	
	Helderbergian	Keyser	Kenneth Ls.	
Silurian	Cayugan	Bertie-Akron	Kokomo Ls.	Niagara sand—Lower Siosi
	Niagaran	Racine-Guelph	Huntington Ls.	
		Manistique	Louisville Liston Creek Ls. Waldron Laurel Liston Creek Ls.	Niagara sand—Lower Siosi Niagara sand—Lower Siosi
		Rochester	Osgood-Mississinewa Fmn.	
	Medinan	Cataract	Brassfield Ls.	
Ordovician	Cincinnatian	Richmond	Elkhorn Whitewater Saluda Liberty Waynesville Arnheim	
		Maysville	Mt. Auburn Corryville Bellevue Fairmount Mount Hope	
		Eden	McMicken Southgate Economy	
	Mohawkian	Trenton	Cynthiana	

miles. Its throw varies from 100 to more than 200 feet. Small faults are found in Harrison, Perry, Posey, Pike, Daviess, and Clay counties but none is of any great consequence. Perhaps the one in western Posey County with a throw of 70 to 90 feet is more important. No major anticlines or areas of disturbance such as the LaSalle arch, the Rough Creek Uplift, Shawneetown Fault, etc., are known to exist. The Kentland dome in Newton County covers a very small area and seems to qualify as one of the crypto-volcanic structures.

The anticlinal areas in the state which are productive of oil and gas have been considered to be largely of sedimentary origin. The writer can agree with this viewpoint only in part, especially since seismograph records reveal that many of these "folds" continue into and through the lower Paleozoic rocks.

Unquestionably many of the fields which produce from the shallow Pennsylvanian sands, as in Sullivan, Knox, and Posey counties are due to differential compaction or lensing of sands in a subsiding basin. Small coal hills and basins covering 40 to 160 acres with reversals of dip of 10 to 40 feet certainly have little structural significance, even though they may carry some oil or gas. Even some of the Chester sandstones thicken sufficiently to form catchment areas, as at North Winslow, Somerville, Bristow, etc.

However, where several sands pyramid in a field and production occurs in both Pennsylvanian and Mississippian sands, (or both Mississippian and Devonian,) the writer is inclined to ascribe a different origin to the collecting structure. In the latter case, if buried hills or compaction are the underlying causes of deformation, the responsible topography must be Silurian or older. Surface anticlines have been shown to coincide with subsurface "highs" at depths ranging from 2,000 to 6,200 feet.

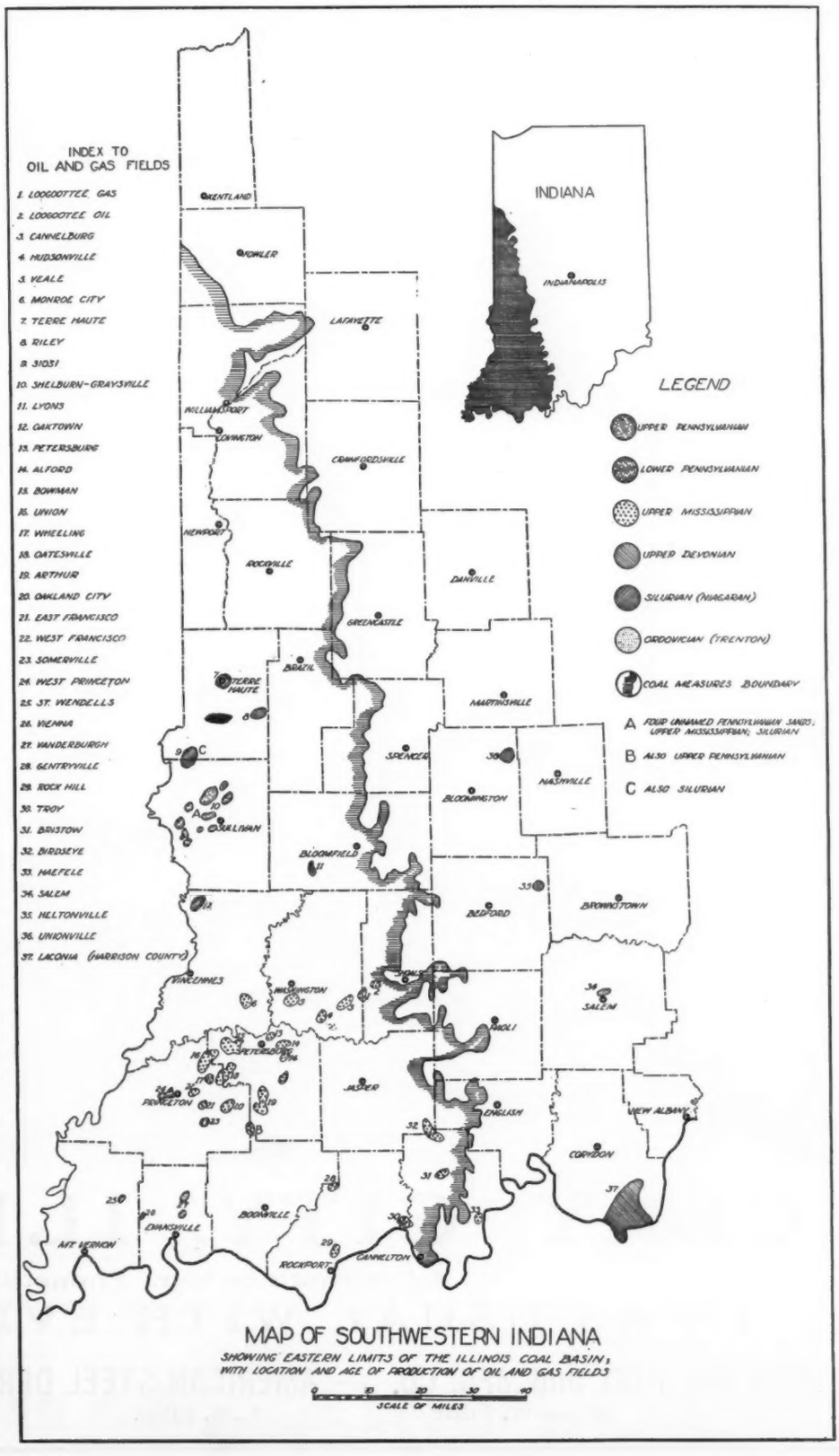
Producing Sands

Excluding the Trenton Rock fields of northeastern Indiana, the producing formation can be divided into four categories, as already mentioned:

Pennsylvanian sands near the center of the basin now producing largely in Vigo, Sullivan, Knox, Gibson, Vanderburg, and Posey counties. Depths to the sands vary from 300 to 1,200 feet. Some of the fields are Shelburn, Heims, Sullivan, Dodds Bridge, Oaktown, West Princeton, and the ones in Vanderburg and Posey counties. Because of the erratic distribution of sandstones in the Pennsylvanian system, both vertically and horizontally, no concerted attempt has been made to correlate and name them. Names have originated largely from the fields in which the sands produce locally. Recoveries from the sands have not been large; from below a thousand barrels per acre to above six thousand. Initial production has varied from a few barrels to 150 barrels per day. The long life of the fields has been an important factor in their production records.

The Chester sands of Upper Mississippian age have been the most prolific producers in the southwestern part of the state. As the geologic time scale reveals, there are six or eight possible producing horizons. Erosion and truncation of the beds in the northern part of the basin eliminates much possibility of production north of Knox, Daviess, and Martin counties. Wells in northern Sullivan and Vigo counties sometimes show less than 100 feet of recognizable Chester sediments. In Parke and Fountain counties the Mansfield sandstone rests upon St. Louis and older formations while in Pike and Gibson counties where records are available in the southern part of the basin, thicknesses of 500 feet of Chester formations are recorded. Some of the important members from the standpoint of oil production are correlated as follows: The Tar Springs sandstone or Jett sand, the Sample or Barker sand; the Mooretown or Oakland City sand; and the Brown or Paoli formation. Available figures show production as ranging from 2,000 to 10,000 barrels per acre, but considerable data of this type are not available. Initial daily production from many wells in these sands has been reliably reported in excess of 300 bbls. per day. Depths to the various producing horizons vary from 200 to 1,800 feet.

Drilling to the McClosky sand has been rather limited on the Indiana side of the Coal Basin, except in Vigo and Sullivan counties. The irregular porosity of the Ste. Genevieve Oolite and the St. Louis limestone along with its depths have been deterring factors. A few fields are now producing from the McClosky, at least in part: Wheeling in Gibson County, Veale in Daviess County, Francisco in Gibson County, and Decker and Bicknell in Knox County. Two wells near Wheeling on the Vierling



MAP OF SOUTHWESTERN INDIANA

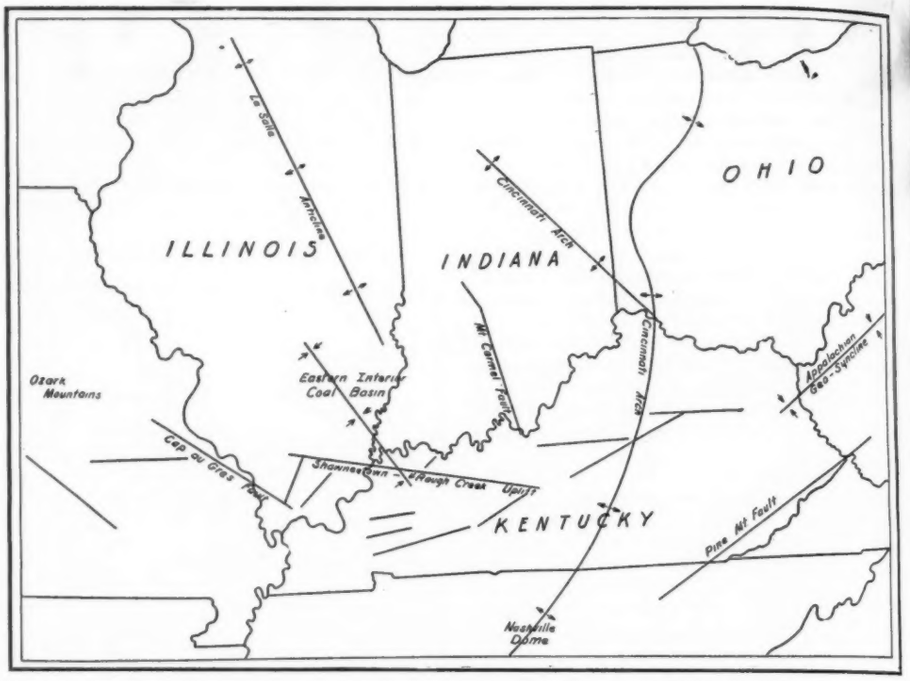
SHOWING EASTERN LIMITS OF THE ILLINOIS COAL BASIN; WITH LOCATION AND AGE OF PRODUCTION OF OIL AND GAS FIELDS

lease reported initial flows above 500 bbls. per day.

Production from the Devonian-Silurian contact is being sought after more at the present time than that from any other horizon. Only a few fields are producing from the porous zones near this horizon at the present time, such as Siosi, Terre Haute, (now abandoned), Prairietown (new field of Carter Oil Co.), and Riley (now abandoned) in Vigo County, Dodds Bridge in Sullivan County (gas wells of Ohio Oil Co.), Unionville gas field in Monroe County and the Leesville gas field in Lawrence County, (the two latter are along the Mt. Carmel Fault), the Lyons oil and gas field in Greene County, (a small field now abandoned), the gas field of Harrison County, and the shallow fields in Gilham and Walker Townships in Jasper County.

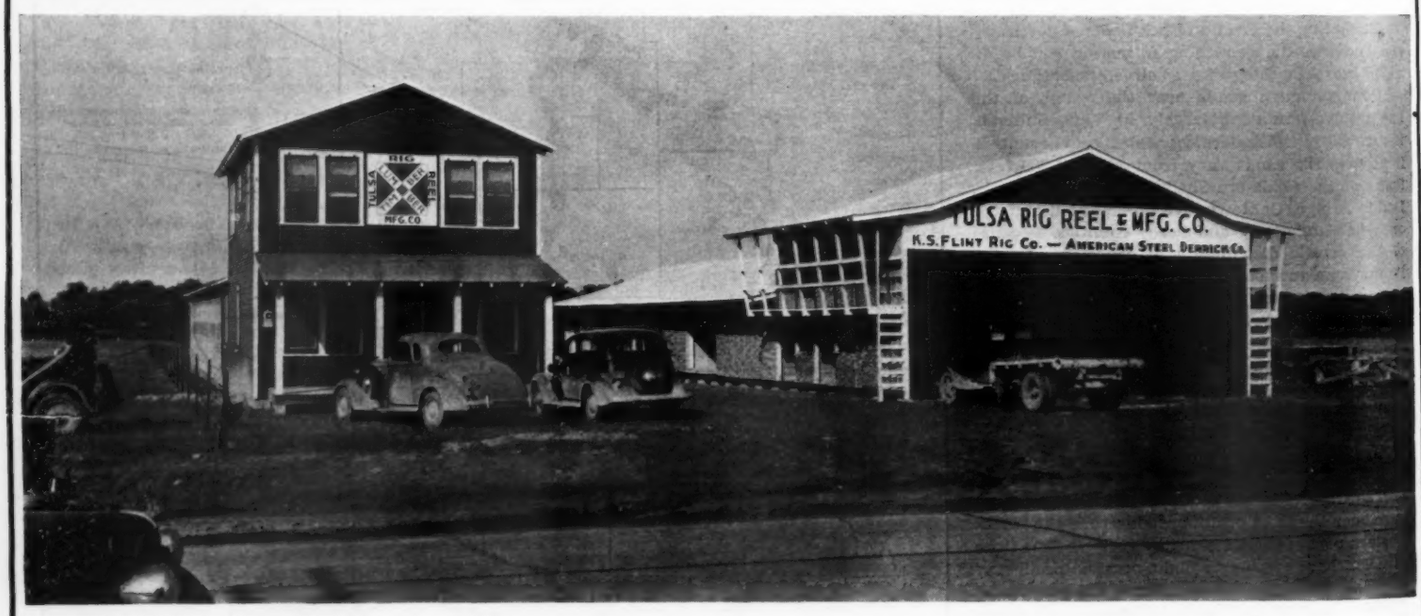
Mention should be made of the Prox well drilled within the city limits of Terre Haute in 1888. It struck oil in the Niagara horizon at a depth of 1,625 feet and produced until 1928. Total production from the well is estimated above 300,000 bbls., although its initial flow was not large. Offset wells were small and failed to produce over such a long period of time.

Good showings of oil or gas in the Niagaran sands have been reported from several wells scattered through the western part of the state, for instance: at Indian Springs in Martin County, at Alfordsville in Daviess County, near Farmersburg in Sullivan County, near Wilfred in Sullivan County, south of Washington in Daviess County, near Oakland City in Gibson County, and many others. Only a few scattered wells have tested this horizon outside of the areas mentioned above. The Gudgell well near Oakland City bottomed at 4,000 feet in Upper Ordovician is the deepest and farthest into the basin testing the Devonian-Niagaran formations. No wells in Knox, Pike, Posey, or Vanderburg counties have penetrated the Devonian, and only a very few have been drilled in the counties bordering these to the east.



Principal geological features of Eastern Interior Coal Basin province

The Trenton limestone and St. Peter sandstone of Ordovician age have scarcely been tested on the Indiana side of the Coal Basin. The William Riggs No. 18 of the Siosi Oil Co. in section 32, township 10 north, range 10 west, was reported as finding saturation in the Trenton at 3,414 to 3,534 feet, but not sufficient to make a well. The Ohio Oil Co. tested the Trenton on the Lovelace farm in section 23, township 13 north, range 9 west in Vigo County, reporting the Trenton dry at 2,498 to 2,520 feet and the St. Peter as dry at 3,080 to 3,160 feet. A third well in Vigo County in section 33, township 13 north, range 8 west, bottomed at 2,490 feet, reported the Trenton as barren. Two Trenton tests have been drilled in Clay County. Both were noncommercial wells, but reported some saturation.



CLAY CITY, ILLINOIS

Ralph Shaffner, Mgr. Phone 65

IN AS USUAL WITH EVERYTHING

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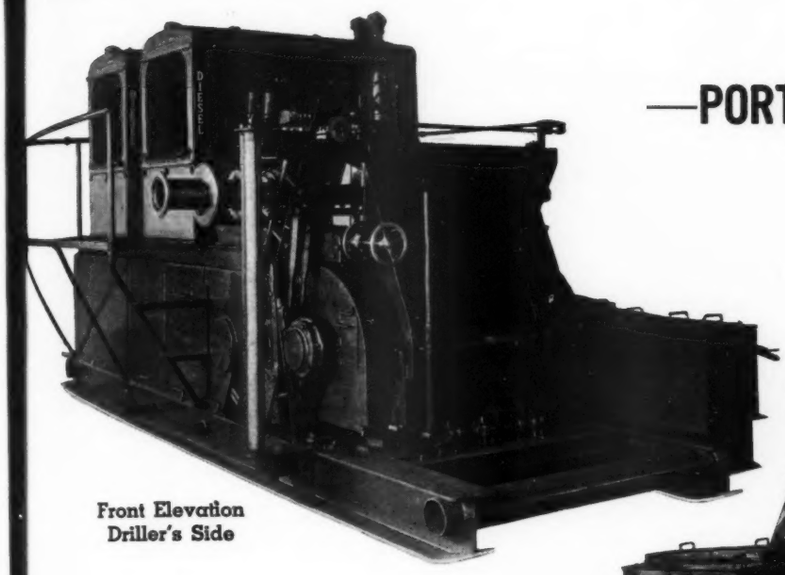
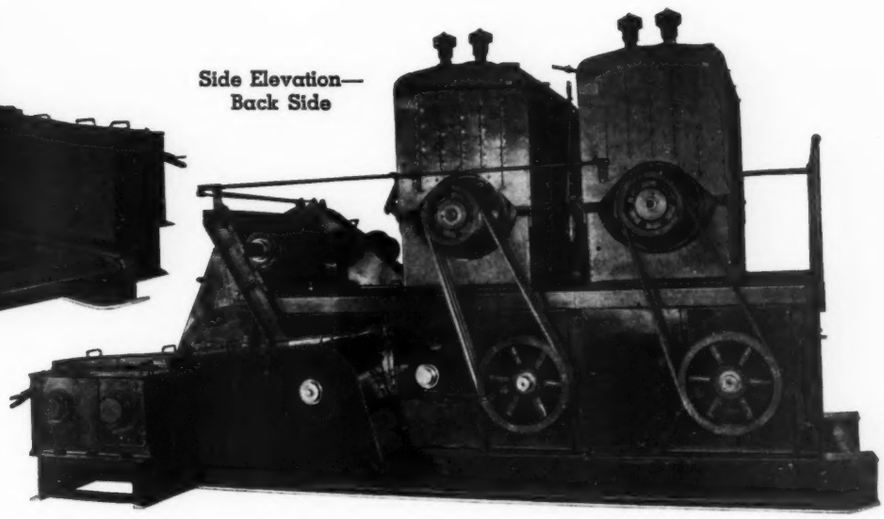
Chas. W. Flint **K. S. Flint** **Roy Lundy**

SHAFFER SPECIALTY
SAFETY SIMPLICITY

—PORTABLE ROTARY DRILLING UNIT—



Front Elevation
Driller's Side



Side Elevation—
Back Side

WEIGHT 32,000 POUNDS

LENGTH 18 ft. 9 inches **WIDTH 8 Feet**

THAT'S
PORTABILITY PLUS

THE SHAFFER Portable Rotary Drilling Unit of the size shown above is designed for drilling to four thousand feet using three inch drill pipe, and twenty five hundred feet with four inch drill pipe.

THE COMPACT arrangement of power units, transmission drive and draw works incorporates the complete unit in a single truck load.

THIS UNIT is readily adaptable to Dual installation of any make Diesel or Gas-Gasoline engines delivering a maximum capacity of 125 HP each requiring no alteration in mounting construction.

LEVERS for operating all Clutches as well as Compound Throttles are centralized at the drillers position. Throttle control is incorporated in a single hand wheel comparable to steam throttle control.

BOTH ENGINES may be compounded to operate the pump, while at the same time, rotary table speeds of 35-55-75 and 110 RPM are available.

WE HAVE DESIGNED this unit to meet the new demands and requirements which have been recognized as essential to economical operation. All of the principals incorporated in this unit are the direct result of practical field experience and engineering research, and the changing trend in operation.

IT IS HIGHLY GRATIFYING to examine performance records from the field which have revealed that we have successfully met these new demands.

LOWER Fuel, Maintenance and Transportation Costs have been definitely achieved.

IF YOU ARE INTERESTED in these things you will not hesitate to communicate with us for further and more complete detailed specifications and information.

REMEMBER—This Portable Rotary Drilling Unit is Big Enough and Strong Enough to operate with efficiency. It is scientifically designed to be compact, and no sacrifice has been made in construction to achieve its practical portability.

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They Stand the gaff

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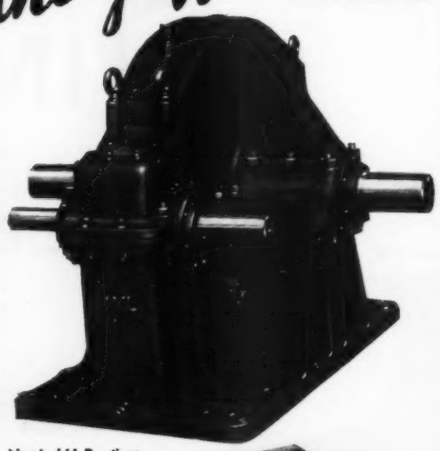
IXL Helical Pumping Reducers are not just ordinary industrial speed reducers, but are especially designed for the heavy service of fluctuating oil field pumping loads. Long, maintenance-free life is built into each unit through years of research and experiment in the oil fields by Foote Brothers' engineers. There has not been a failure in four years of service.



Nominal H. P. ratings
at 20 S. P. M. 21 S O 25 H.P.
26 S O 40 H.P. 20 S O 60 H.P.

Above is the IXL Single Reduction Unit, built to Foote Bros. engineering standards for severe oil field service. Note table of ratings.

The IXL Double Reduction Unit is illustrated to the right with accompanying ratings below.

New Gear Data Book

Complete gear reduction data is now available in our new Bulletin 405. Given are H. P. ratings, load capacities, specifications, dimensions, over-hung load capacities, and formulae for selecting the right IXL pump reducer.

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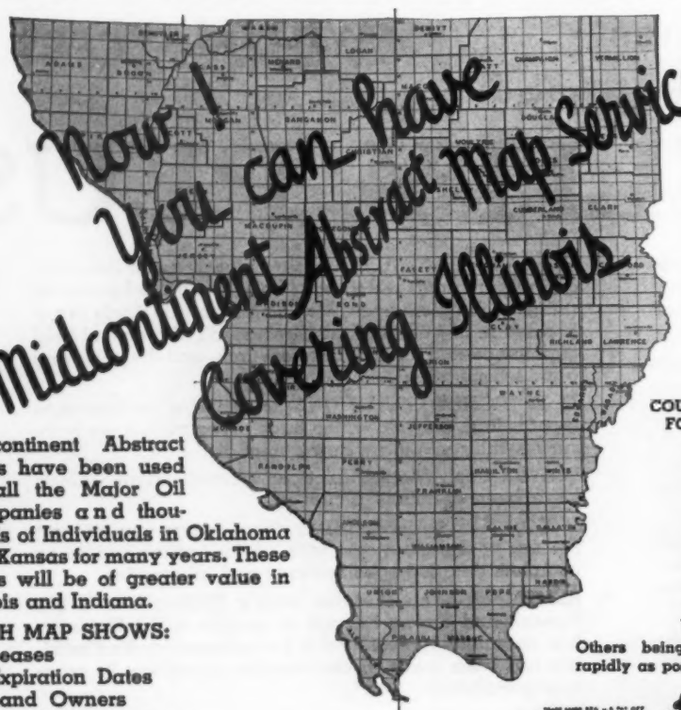
Nominal H.P. ratings at 20 S. P. M.

10 D O 8 H. P.
12 D O 30 H. P.
15 D O 50 H. P.
17 D O 70 H. P.
20 D O 87 H. P.

BASIN AREA—STATE OF ILLINOIS



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The Butts No. 1 in section 34, township 12 north, range 7 west, by the Siosi Oil Co., apparently found the Trenton dry at 3,100 to 3,126 feet, and the well of the Reece Oil and Gas Co. in section 30, township 11 north, range 7 west was also a dry hole.

The Coffing No. 1 in section 28, township 20 north, range 8 west, Fountain County, reported showings of both oil and gas in the Trenton at 1,990 to 2,075 feet. One Trenton test was drilled in Warren County on the Farden farm in section 24, township 21 north, range 9 west. Saturation and showings were reported between 1,674 and 1,802 feet. Around the rim of the basin, and starting in Mississippian rocks, several wells have reported light production or good showings in the Trenton formation. This would include tests in Harrison, Crawford, Orange, Lawrence and Monroe counties. The test mentioned above is the only one carried to the St. Peter sandstone within or along the margin of the Coal Basin.

A brief summary of the present situation in Indiana would include the following points:

Production from Pennsylvanian sands will probably be found in those counties bordering the Wabash River and including Vanderburg. Depths to the sands are 300 to 1,200 feet. Small wells with long lived fields are the rule.

Anticlinal areas based upon coal beds covering 600 acres generally indicate the presence of deeper structure and warrant testing to the McClosky or Niagaran in most cases.

Chester Sand

Chester Sand production will largely come from Knox and Daviess counties and especially those to the south. The most widespread and prolific production has come from these sands. Depths from 400 feet to 2,000 feet. Largely untested in Posey, Vanderburg and southern Gibson County.

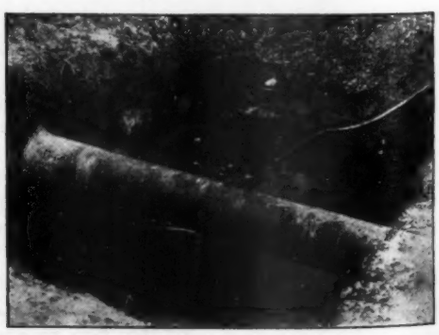
McClosky or Ste. Genevieve and St. Louis sands are largely untested in the southern part of the basin in Indiana. The Vierling wells in this sand were the largest in the state.

The Devonian-Silurian horizons offer considerable promise for deep production, especially near the margins of the basin. Three and sometimes four porous zones are found in a vertical distance of 300 feet. The Siosi field has the best production record of any in the state. Depths will vary from 1,500 to 4,000 feet in the basin proper.

The Trenton limestone, although largely untested, offers opportunity for deep production. There is no known geologic reason why porosity should not exist in the Trenton in this part of the basin.

The St. Peter sandstone should probably be tested along the Mt. Carmel Fault or upon an anticlinal area where it is comparatively shallow before deep tests are made in the basin.

Trap Mounted on Well

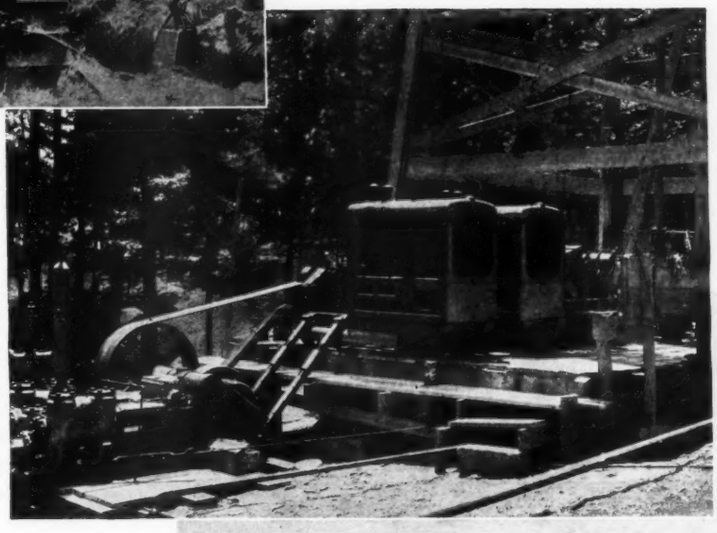


Automatic trap mounted on a 10 by 24-inch well on a gas line serving the United Gas Public Service Co. This method of draining condensate in the line has been found to be unusually satisfactory.

For the Tough Work, at LOW COST

INTERNATIONAL TRUCKS TRACTORS POWER UNITS

Above: An International T-40 TracTracTor laying pipe—one of the many jobs these crawler tractors have done successfully for years. There are five TracTracTors including two with Diesel engines.



Left: Two International PA-100 Power Units used by T. L. Benson, drilling contractor, to power a portable rig. They are shown here drilling in the Grogan field, De Soto Parish, Louisiana. International Power Units have a great reputation for providing power when wells go on the pump as well as for other stationary power work.

INTERNATIONAL TRUCKS and Tractors are the choice when it comes to those hard, heavy jobs that call for a lot of *action*, a lot of *economy*, and a lot of *stamina*. And when stationary power is needed, International Power Units get the call on their record of low operating and upkeep costs. All are veterans of the oil industry—the high regard you find for them everywhere is based on their outstanding performance under the toughest kind of conditions.

Today there is a complete new line of International Trucks—*new* in appearance, *new* in engineering throughout—from which you can expect great things. They are ALL-TRUCK trucks in every detail. The line includes 26 models in 79 wheelbases, from Half-Ton units to powerful Six-Wheelers.

Ten International Industrial Tractors—five wheel and five crawler types (gasoline and Diesel) are made by International Harvester, world's largest tractor builder. They fill the bill exactly on a variety of jobs, and the long list of equipment built around them further increases their usefulness.

Ten International Power Units ranging up to 110 max. h.p. are available. Two are Diesel engines—the other models operate on gasoline and gas. They have made an exceptional record pumping and there is a definite swing to them for drilling. When peak loads require additional power, multiple installations are made.

A powerful International Six-Wheel Truck hauling a boiler into location. Roadless going with loads like this is all in the day's work for these famous trucks.

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INTERNATIONAL HARVESTER

Western Kentucky Preparing for Influx of New Drilling

By THOMAS M. GALEY
Owensboro, Ky.

The Eastern Interior Basin underlies most of the State of Illinois and all of southwestern Indiana and northwestern Kentucky. In Illinois, the deeper portion is known as the "Illinois Basin." In Kentucky the deep canoe-shaped southeastern division of the great Eastern Interior Basin is an impressive structural feature known as the "Western Kentucky Basin." However, it is necessary to think of the whole Eastern Interior Basin as a unit.

If the Western Kentucky Basin, together with its adjacent area in Indiana, is to be proven to be an important oil reserve it appears most likely it may be the result of finding production in the sands and magnesian limes in the formations of Devonian-Silurian age which are generally grouped together and termed "Corniferous" by the oil men and to the distaste of the geologists.

Fifty Horizons

Throughout the state of Kentucky, oil is found in about fifty horizons, mainly magnesian limestones and, to a minor extent, sandstones ranging through about 5,000 feet of the geologic column.

Most of the oil has been produced from the Corniferous-Niagaran formation which is of Devonian-Silurian age and lying at comparatively shallow depths on the east and south flanks of the Cincinnati arch.

Operators are now organizing to make a systematic exploration of the large areas in Indiana and Kentucky which lie on the west side of the arch, the immediate object being the Devonian-Silurian formations and the deeper and more speculative Ordovician formation.

In the Devonian-Silurian formation a distinction is made between Corniferous "lime oil" and Corniferous "sand oil." The areas of lime saturation are restricted. The areas of sand saturation are more extensive and important. In eastern Kentucky large areas are found where the producing zones are brown sands. In western Kentucky and Indiana, so far as known, the presence of sand bodies has been proven.

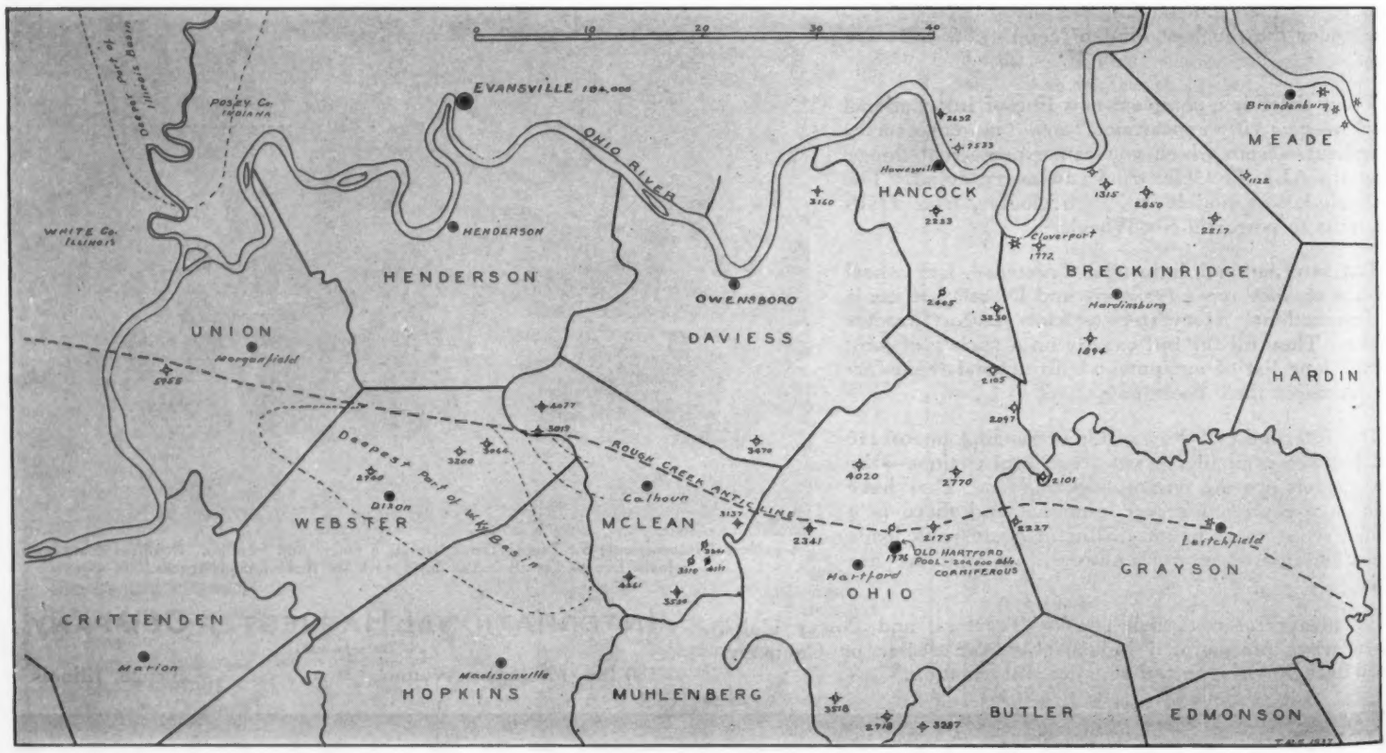
For fifty years widely scattered drilling over this vast region in Indiana-Kentucky, and ranging into Illinois, has developed valuable production in the Chester series of the Upper Mississippian. The presence of oil and gas in the older Devonian-Silurian at comparatively shallow depth has been definitely proven throughout an area of 5,000 square miles. In Vigo and Sullivan counties in Indiana and 120 miles southward in Ohio County, Kentucky, pools of more or less commercial importance have been found.

For the first time the region is now being studied under modern methods in advance of exploration by the drill. Seismograph crews and geologists are at work and the leasing crews have checker-boarded tens of thousands of acres under leases which call for an average rental payment of twenty-five cents per acre per year.

In northwestern Kentucky, leasing is most active at this time in the counties of Union, Webster and Henderson and sweeping eastward. The earlier arrivals secured large areas on a 25 cent rental basis, payment to commence after the first year. The later arrivals are paying from 25½ to 50 cents per acre per year in advance.

The companies represented in the leasing program include: The Kentucky Natural Gas Co., Carter Oil Co., Magnolia, Pure, Phillips and Sun and a number of the operators who have their headquarters in Owensboro.

On the Illinois side, in the deeper portion of the



Map of northwestern Kentucky showing practically all of the deep wells which have penetrated into or beyond the "Corniferous." On the east end, in Breckenridge and Grayson counties, a number of "Corniferous" test locations are omitted. The shallow production is not shown. It is mainly located in the counties of Hancock, Ohio, Daviess, McLean and Henderson. The area covered by the map is about 5,000,000 acres

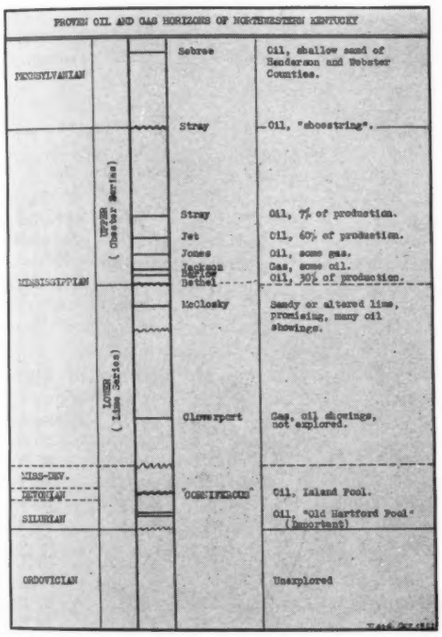
basin, the first well to penetrate the "Corniferous" was completed a few weeks ago. A study of the formation where it is not so deeply buried in adjacent areas of Indiana-Kentucky will have an important bearing on deeper exploration of the Illinois Basin.

Large Area Involved

The combined leasing play in the Illinois-Indiana-Kentucky region is by far the largest in the history of the business. It comprises more than 7,000,000 acres, over 1,300 square miles which largely controls an area of upwards of 4,000 square miles. It is a major economic factor in the lives of thousands of people. The very magnitude of the undertaking suggests that a determined collective effort will be made to find new oil reserves throughout a vast region contiguous to centers of population and involving, in due time, the expenditure of millions of dollars.

The amazing feature is the speed of the leasing program and the great areas already covered by preliminary scientific examination. The more costly drilling program will follow. It seems likely the effort may be sustained for a considerable period because of its magnitude and the ten-year term of most of the leases.

The geologists have in mind the large quantities of oil taken out of the porous strata in the magnesian limes in the "Corniferous" of Indiana-Ken-



tucky, the Clinton of Ohio, the Trenton of Ohio-Indiana and the counterparts of these formations in Michigan and the Mid-Continent. All these formations or their counterparts are represented within the Eastern Interior Basin at comparatively shallow depths.

The "Corniferous" is indicated to be the most promising horizon for exploration at this time. In the deeper Ordovician, there is the possibility that porosity in its Clinton and Trenton counterparts may be such that production may be found. As an index of what may be expected in the Ordovician, it may be said that its record in south central Kentucky has not been satisfactory. Numerous shows of oil and gas are found but concentration into valuable pools appears to be lacking. Absence of shale and "cap rock" in the formation may account for this condition.

The McClosky in the Ste. Genevieve of the Lower Mississippian has made records on the Illinois side and is the cause of wide interest.

Throughout the Indiana-Kentucky area the wide distribution of the McClosky, where it is known as the "second break," is noted. In northwestern Kentucky, in particular, it has been the stopping point in more than one hundred wells. A large percentage of which have contained oil showings ranging from one to ten barrels natural.

Near Whitesville in Ohio County, four wells in the McClosky have been consistent producers for seven years. In a half dozen widely scattered areas, individual wells have been saved. In Muhlenberg County a McClosky well has produced over 80,000 bbls. of oil. The future of the McClosky throughout the area may be said to be fairly interesting. Areas of enrichment appear to be freakish so far as discovered. Nobody in Kentucky has as yet figured out the way to make the formation respond satisfactorily to acidation and shooting.

The shallow sands in the Chester group of the Upper Mississippian are of local interest only. In northwestern Kentucky, the counties of shallow oil production include Hancock, Ohio, Daviess, McLean and Henderson, a rectangular area of about 1,600 square miles. The area of deeper drilling interest includes the above named counties with the addition on the west part of Union and Webster counties.

Approximately 9,000 wells have been drilled of which more than 100 were carried into the McClosky and 35 or 40 into the Devonian-Silurian. The deepest penetration into the Ordovician was the Rhodes well in the Taffy district of Ohio County. It was drilled by the Ohio Oil Co. and penetrated 1,475 feet below the Devonian shale. Next in order may be listed a well at Victoria in Hancock County, 1,227 feet, another at Narrows in Ohio County, 685 feet, another at Cannelton on the Indiana side, 422 feet. The depth of the Trenton below the Devonian shale is approximately 700 feet and in the recently completed deep well in Perry County, Illinois, the interval is 1,182 feet.

In the year 1936, the four counties in northwestern Kentucky's shallow field, known as the

(Continued on Page 123)

In the New Illinois Field

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Ready to work with you!

Refining Value of Illinois Crude About Equal to Mid-Continent

Laboratory analyses of samples of crude produced in the new Illinois Basin fields indicate that the quality of these oils compare favorably with average Mid-Continent crude.

Samples taken from representative wells in the Clay City pool indicate that refiners can recover at least 32 per cent straightrun gasoline of 410 end-point with an octane number of at least 50.

Crude oil samples collected in the Noble pool indicate that refiners may expect to get a slightly higher yield of 410-endpoint gasoline with about the same octane value.

The crudes produced in both areas are relatively low in sulfur content, present no unusual difficulty in transporting by pipe line at any normal atmospheric temperatures, and they are suitable for the manufacture of lubricants and steam-refined cylinder stocks.

One refiner, who has processed some of the new Illinois crude, has indicated that the asphaltic residuum which he has been able to make from the crude bottoms is slightly inferior in ductility to the comparable asphalt made from Mid-Continent crude.

The laboratory tests on the samples included here indicate that the straightrun 410-endpoint gasoline would not be suitable as a motor fuel for the average car on the highways today but the crude can be processed through a cracking unit to produce motor fuels fully up to present day octane requirements.

In view of this fact, a majority of the crude to be produced in the new Illinois Basin fields will probably be transported by pipe lines to the major refineries already located in the central states, namely those in the Chicago, St. Louis and western Ohio areas.

Although the location of the Illinois fields would normally favor establishing small skimming plants there, because of the nearness of market for the products, this will probably have to await a decided increase in crude output before being probable.

Tests on samples of representative crude pro-

(Continued on Page 123)

CLAY CITY CRUDE

Crude found in McClosky, a porous, oolitic lime horizon in the Ste. Genevieve formation of Mississippian age.

Present production: 15,000 bbls. daily near Clay City, Clay County, Illinois.

TESTS ON CRUDE

Gravity (D287-33)	37.5 A.P.I.
Pourpoint (D97-34)	—30° F.
Sulfur (D129-34)	0.22%
Viscosity (D88-35)	41 S.U. at 100° F.
B.S.&W. (D96-30)	0.1%
Viscosity-gravity constant	0.827
Distillation (D285-33):	
0.5% Rec.	212° F.
17.5%	257
25.5%	320
29.5%	356
31.0%	374
33.5%	392
41.0%	460
45.0%	500
51.0%	550

YIELD OF NAPHTHAS OF VARIOUS ENDPOINTS

	400 e.p.	330 e.p.	300 e.p.	250 e.p.
Gravity (A.P.I.)	57.4	60.7	64.0	69.5
Octane (A.S.T.M.)	49.5	54.5	61.0	66.0
Pb Et, to 70 O.N.	2.8 cc.	1.5 cc.	0.7 cc.	0.3 cc.
Yield on crude	32.5%	34.5%	16%	8%

14% Bottoms: 270 penetration at 77° F.

ANILINE POINTS

Hempel cuts—	Gravity (A.P.I.)	Aniline No. (°F.)
0-5 per cent	77.4	136
5-10	61.9	124
10-15	58.3	129
15-20	54.8	128
20-25	50.0	133
25-30	47.6	135

NOBLE POOL CRUDE

Crude oil from well No. 1, J. C. Eagleton lease, Richland County, Illinois.

TEST ON CRUDE

Gravity	Pourpoint	B.S.&W.	Vis./70° F.	Vis./100°F.	Sulfur	Water	Color
39.2	Below —30° F.	0.2%	44 sec.	41 sec.	0.13%	0.2%	Dark green

DISTILLATION OF CRUDE

Cut No.—	Column head temp. °F.	Per cent cut	Total per cent	Mid. per cent of cut	Vis./100	Vis./130	Vis./210	A.P.I. gravity
Initial	84	....	....	....	...	...	...	....
1	138	5.0	5.0	2.5	...	...	...	84.5
2	202	5.0	10.0	7.5	...	...	...	67.1
3	239	5.0	15.0	12.5	...	...	...	59.8
4	280	5.0	20.0	17.5	...	...	...	56.3
5	319	5.0	25.0	22.5	...	...	...	52.5
6	358	5.0	30.0	27.5	...	...	...	49.0
7	410	5.0	35.0	32.5	...	...	...	45.3
8	419	1.0	36.0	35.5	...	...	...	43.5
9	424	1.0	37.0	36.5	...	...	...	42.9
10	428	1.0	38.0	37.5	...	...	...	42.3
11	432	1.0	39.0	38.5	...	...	...	41.8
12	475	3.0	42.0	40.5	...	...	...	40.5
13	499	3.0	45.0	43.5	...	...	...	38.8
14	506	1.0	46.0	45.5	...	...	...	37.9
15	538	3.0	49.0	47.5	...	...	...	36.7
16	565	3.0	52.0	50.5	40	...	...	36.1
17	595	3.0	55.0	53.5	43	...	...	34.4
18	626	3.0	58.0	56.5	49	...	...	32.8
19	654	3.0	61.0	59.5	58	...	...	31.1
20	695	3.0	64.0	62.5	74	...	...	30.6
21	725	3.0	67.0	65.5	102	...	...	29.3
22	792	3.0	70.0	68.5	161	87	...	28.0
23	Steam	3.0	73.0	71.5	...	127	...	26.9
Bottoms	...	23.6	96.6	....	...	...	356	22.6
Second rec. gaso.	...	1.2	97.8	....	...	...	...	....
Second rec. oil	...	0.0	97.8	....	...	...	...	....
Water	...	0.2	98.0	....	...	...	...	....
Loss	...	2.0	100.0	....	...	...	...	....

PRODUCTS AND YIELD TABULATION

Product—	Per cent volume	A.P.I. gravity	Viscosity	Per cent sulfur	Octane No.	Anil. pt.	Pour	Flash	Fire	Cuts
50 octane gasoline	36.2	58.7	.....	....	50	....	...	...	...	(*)
420 e.p. gasoline	39.2	57.6	.....	0.04	47	....	...	...	...	(†)
Kerosene dist.	7.0	38.9	.....	0.03	...	....	...	...	...	11-13
Cracking stock	7.0	36.4	.....	....	...	168°F.	...	...	...	14-16
Wax distillate	21.0	30.2	76 SU/100	....	...	184°F.	+55	355	390	17-23
Bottoms	23.6	22.6	356 SU/210	....	...	....	+45	560	605	.....
Water	0.2	....	(542 Furol/122)	....	...	....	(Min.)	...	...	.....
Loss	2.0	....	.....	....	...	....	...	...	...	.....

Viscosity — Gravity Constant — Wax Distillate — 0.838

*1 to 7 and second recovery gasoline. †1 to 10 and second recovery gasoline.

A.S.T.M. DISTILLATION

Product—	I.B.P.	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	E.P.	% rec.	% res.	% loss
50 oct. gaso.	112	152	170	198	222	245	268	287	309	326	365	384	403	97.6	1.0	1.4
420 e.p. gaso.	112	150	171	202	227	246	270	304	329	356	385	407	420	97.7	1.0	1.3
Kero. dist.	438	444	448	450	454	456	459	462	466	470	477	484	495	98.0	0.9	1.1
Cracking stock	505	517	520	523	526	529	533	537	540	544	551	556	561	97.0	2.8	0.2

duced in the Clay City and Noble fields are included here.

NOBLE CRUDE TESTS

County	Richland
Pool	Noble
Sand	McClosky

TESTS

Gravity—A.P.I.	39.6
Viscosity—S.U. at 100° F.	40
Sulfur—per cent	0.31

Distillation—	Temp.	Grav.
I.B.P.	104	
5 per cent	182	81.5
10	222	76.6
15	256	66.4
20	288	61.1
25	324	56.1
30	352	52.4
35	410	48.3
40	448	45.0
45	495	41.9
50	540	39.0
55	590	36.5
60	637	34.2
65	682	32.5
70	708	31.9
75	726	31.0

Octane No. of 400 E.P. straightrun gasoline ... 51.8

Western Kentucky

(Continued from Page 119)

"Owensboro Field," produced 3,104,010.74 bbls., a daily average of 8,480.90 bbls. which came from approximately 3,587 wells. This was 56 per cent of the whole production of the state of 5,506,281.67 bbls., a daily average of 15,044.49 bbls. At this time, in the year 1937, the old fields in Illinois are averaging about 14,150 bbls. per day which is perhaps slightly less than the current daily average in the state of Kentucky.

The information thus gained has not been correlated and studied as a whole because of the failure of the state legislature to provide funds to support its geological survey.

In Indiana, production from the Chester group is negligible. The old Corniferous production in Vigo and Sullivan counties, the Unionville pool of Monroe County, the scattered wells in Dubois and Lawrence counties together with the Martinsville pool in Clark county, Illinois, will all be studied in connection with the north-south structural trend east of the LaSalle anticline.

Rough Creek Anticline

The most outstanding structural feature of the northwestern Kentucky area is the Rough Creek anticline which bisects the above named counties, ranging from eastern Saline County in southern Illinois on the west into Hart County, Kentucky, on the east, a distance of about 130 miles.

This anticline governs production in the shallow Chester series. It appears to be a ridge formed by the greater subsidence of the western Kentucky Basin rather than a definite uplift.

The north flank of the anticline is characterized by abrupt drops or narrow fault zones of varying magnitude and extending for miles. At intervals lesser faults lead off in a northward direction and disappear. The south flank is characterized by a series of domes and elongated ridges which parallel the above described faulting along the north flank. In places these domes are abruptly disrupted or "split" by sections or "grabens" which have dropped above the faulting zone. The south slope of the anticline characterized by fairly steep dips toward the basin, the uniformity being interrupted to some extent by minor faults and folds. The anticline parallels the western Kentucky Basin throughout its entire length.

Study of the Rough Creek anticline has been meager. It appears to be largely post-Chester in age, in other words, it may have been formed at too late a period to directly govern accumulation in Devonian and older formations. However, shortening of the Lower Mississippian volume as noted in wells drilled on the Rough Creek anticline suggests it may be of an earlier period. That may mean that accumulations had found their home long before the disturbance took place so that Corniferous oil, for instance, may be found in favored areas elsewhere regardless of the direct influence of the Rough Creek anticline. However, this statement of the age of the anticline is subject to alteration, a matter of importance in planning future drilling.

Structure of the deeper formations is not closely reflected in the structure of the surface beds, so far as known. The extent of displacements in the Rough Creek anticline is so great, more than 1,000 feet in places, that the ancient buried structures in the lower formations are brought near to the surface. That may account for the Corniferious oil found in the old Hartford pool which will be mentioned later.

Data is available for the making of accurate subsurface maps in the Chester series, and to some degree in the underlying McClosky horizon. The two together may be an index of the major structural features in the Devonian-Silurian and Ordovician.

A study of 30 "deep" well logs suggests extensive unconformities, wedging and irregularities below the McClosky and in the Devonian-Magaran contact. That may mean alteration in the limestones affecting their porosity and permeability which may account for important accumulations in the older formations. It may mean a hit and miss search for the deeply buried structures unless the seismograph can render aid.

(Continued on Page 125)

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Soviet Industry Main Problem Is Finding Future Reserves

By WILLIAM J. KEMNITZER

The main cause of the failure to increase production to the desired degree is the slow progress of drilling. Notwithstanding steady improvement, drilling of the Soviets is considerably behind that in the United States both as regards speed and technique. With average depths of wells becoming greater and the risk of dry holes increasing, problems of the drillers have intensified. The backwardness of drilling technique is especially seen in deep drilling and in the districts where development is difficult. As a whole, drilling is slow, expensive, unsystematic, and unorganized. Operation technique has improved markedly, but drilling technique has lagged behind. It must be emphasized that only by improving radically the drilling technique and by using the most modern materials and equipment, and by remodeling the entire drilling organization, can the production program be fulfilled.

The principal measure or standard for drilling achievement is the monthly speed per drill. In 1934 an average monthly drilling speed of 157.4 meters (about 472 feet) per drill was made in the U.S.S.R. In the United States the average speed is probably between 700 and 800 meters per month. Obviously, drilling results are far below foreign standards. Efforts to increase speed have usually decreased efficiency. In other words, when speed is obtained it is usually accompanied by serious accidents and poor completions.

Nearly all of the wells in the Soviet Union are now drilled with rotary tools. In 1934 more than 98 per cent were drilled by this method, whereas in 1928 only 70 per cent were rotary-drilled. The average speed of drilling, although low compared to American achievements, is improving. Although in 1934 the average drilling speed was 157.4 meters per well per month, in 1928 it was only 56.5 meters (about 170 feet) per well per month. The increased speed, however, may be charged as much to the increased proportion of rotary-drilled wells as to personal efficiency.

Of wells drilled, at present approximately 70 per cent are in proved (productive) areas, 18 per cent in semiproved, and 12 per cent in prospective (wildcat) areas. In 1928 about 81 per cent were drilled in proved areas, 13 per cent in semiproved, and 6 per cent in wildcat areas. The number of wells drilled at present is less than 2,000 per year, or less than one-tenth the number completed annually in the United States. In 1936 the drilling program provided for 1,666 new wells, but this goal was not accomplished. For 1937 the number of new wells to be completed is set at 2,200. The total meters drilled has increased noticeably. In 1928 only 362,000 meters were drilled; in 1932 this figure had increased to 745,000, and by 1936 approximately 2,232,000 meters were drilled.

TABLE 15—METHOD OF DRILLING AND SPEED ATTAINED IN OIL WELLS COMPLETED IN THE U.S.S.R., 1913 AND 1928 TO 1934, INCLUSIVE

Year—	Method		Speed (monthly average meters per drill)
	Rotary (%)	Cable, etc. (%)	
1913			34.6
1928	70.7	29.3	56.5
1929	78.8	21.2	72.3
1930	85.4	14.2	89.0
1931	88.8	11.2	90.9
1932	94.1	5.9	108.1
1933	97.3	2.7	118.5
1934	98.4	1.6	157.4

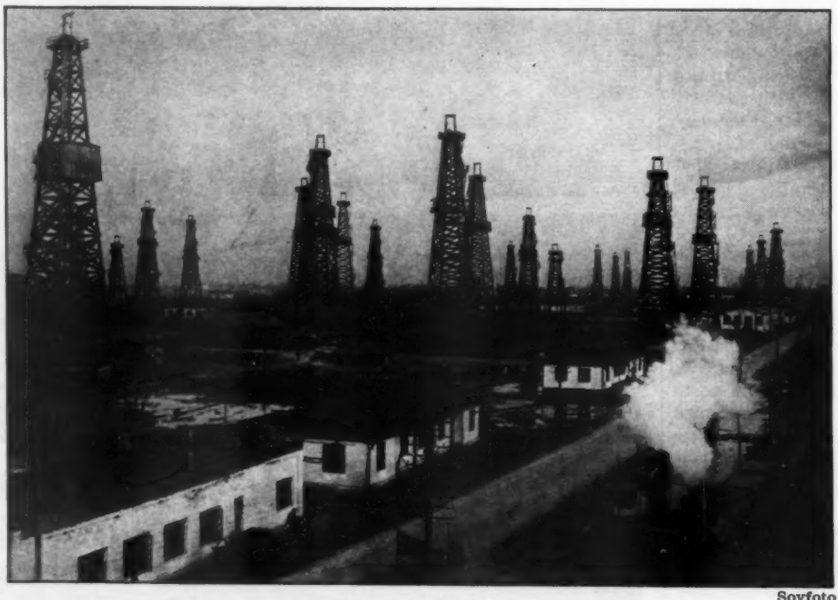
About half of the producing wells are on compressors; a quarter are pumped, and another quarter flowing. About a third of the output comes from new wells; that is, wells that are less than one year old. It is plain to see that constant drilling is necessary to maintain output, but in the U.S.S.R. the annual number of completions has been too small to build up the supply needed. This paucity of completions, it will be seen, may be attributed mostly to drilling inefficiency.

This is the fifth installment of Mr. Kemnitzer's article begun September 23

Despite the upward trend of drilling statistics, the average speed and efficiency of drilling in the U.S.S.R. are yet uncommonly low. The reasons for such drilling are poor organization at the drill hole due to the inferior skill of workers brigades and technical staffs. Insufficient technical experience and poor discipline cause endless breakdowns, loss of tools, and delay, especially in lowering and raising the tools in the hole. The ability to prepare and use drilling muds, to cement pipe and shut off water has not reached a high standard. Above all is the unsatisfactory supply of materials and machinery. Strong well casing, four-speed hoists, powerful mud pumps, and high-grade steel bits are needed. Nearly all of these things supplied by Soviet factories are of poor quality and design. These deficiencies must be overcome by the machine-building industry before any improvement can be made in drilling which will lead to development of the desired supply of crude petroleum.

Comparisons of Soviet with American drilling efficiency may not be entirely fair, but they are, nevertheless, enlightening. In America, usually six or seven sets of tools are available at each drill hole; in the U.S.S.R., rarely more than three sets are available. In America, usually two sets of pumps are at hand; in the U.S.S.R., only one is used. Specialty tools for use in meeting varying conditions of drilling are almost entirely lacking. In short, a well which requires six months to drill in the U.S.S.R. takes about 40 days to complete in the United States.

The "Stakhanoff" movement of "piecework" system has been applied to drilling in the Soviet oil fields, and has had an important effect in speeding up maximum boring in individual cases, but on the whole has not been successful. Almost invariably, when drilling time has been saved the percentage of accidents has increased, a situation leading to no net increase in efficiency.



Sovfoto

Kaganovich field

Conclusions

The main problem of the Soviet petroleum industry is the need of exploring and developing new deposits and developing old ones at greater depth if the country is to be provided with oil reserves sufficient to meet requirements which in the future are expected to grow at a more rapid rate.

This problem is not new. The first Five-Year Plan anticipated an increase of crude-oil production from 11,700,000 tons in 1927-28 to 23,000,000 tons in 1932-33. This anticipation was based on the supposition that new fields would be discovered

and developed capable of yielding toward the end of the plan 25 per cent of the total production. This plan did not come up to expectations, although the production quota itself was over-executed, by forcing production in the older fields of Azerbaidjan and to a smaller extent in the Northern Caucasus. As a matter of fact, the share of fields outside those of the Caucasus continued to be less than 3 per cent in 1934. Subsequent to 1932, Grozny, the second largest oil field in the Caucasus, and Emba, the most important of the so-called "new" fields, declined ominously, indicating approaching exhaustion of existing wells and the need for new ones.

TABLE 16—TOTAL METERS DRILLED AND PERCENTAGE OF METERS DRILLED IN PROVED, SEMIPROVED, AND PROSPECTIVE OIL AREAS IN THE U.S.S.R., 1913, AND 1928 TO 1936, INCLUSIVE

Year—	Total in thous. meters drilled	Per cent total meters drilled— Proved	Semi-proved	Prospective
1913	276.6	...	...	...
1928	362.1	80.9	12.8	6.3
1929	446.0	72.1	19.0	8.9
1930	639.3	68.0	15.3	16.7
1931	707.4	63.3	17.4	19.3
1932	744.6	67.8	14.4	17.8
1933	835.5	67.2	18.4	14.4
1934	1,254.8	69.4	18.4	12.2
1935	1,642.0	...	...	...
1936	2,232.0	...	...	...

The Second Five-Year Plan provides for an increase in crude production from 22,300,000 tons in 1932 to 32,200,000 tons in 1937. The share of the new regions must be increased from 2.5 per cent in 1932 to 12.3 per cent in 1937. The operators of non-Caucasus fields are thus expected to raise their oil production 10 times from 556,000 tons in 1932 to 5,750,000 tons in 1937. Production is lagging behind the pace set. While the Second Five-Year Plan called for an output of 23,020,000 tons in 1933, 30,660,000 tons in 1934, and 35,000,000 tons in 1935; actual production was 22,500,000 tons in 1933, 25,200,000 tons in 1934, and 30,300,000 tons in 1935.

Geological research in all branches is necessary.

TABLE 17—METHODS OF EXTRACTING OIL FROM WELLS IN THE U.S.S.R., 1913, AND 1928 TO 1934, INCLUSIVE

Year—	Flowing	Compressors	Deep pumping	Bailing	Other methods
1913	4.4	...	...	...	95.6
1928	40.0	18.4	33.4	6.9	1.3
1929	44.1	18.6	32.0	3.9	1.4
1930	47.7	22.9	26.9	1.8	0.7
1931	42.2	33.9	21.9	1.1	0.9
1932	24.3	51.3	22.1	0.5	1.8
1933	30.6	43.8	22.8	0.4	2.4
1934	25.8	47.1	24.8	0.3	2.0

But the work of drilling must be improved, skilled operators must be trained, and a steady supply of good materials and modern equipment must be assured.

Western Kentucky

(Continued from Page 123)

The first oil and gas found in northwestern Kentucky came from the Devonian. Seventy years ago the Devonian black shales in Meade County began supplying gas to Louisville. In 1888 the first deep well was drilled at Hawesville. Its history is obscure, but it is known to have been pumped for a number of years from a depth of about 1,700 feet. It is said to have produced 14 bbls. per day of Corniferous oil which was shipped on the newly built L.&N. railroad.

At this time, a citizen of Cloverport in Breckenridge County won $35,000 in a Louisiana lottery. He drilled a well within the town limits and discovered a plentiful supply of gas in the St. Louis lime of the Lower Mississippian. This appears to be in the so-called "gas sand" of Illinois-Indiana. It has not been found productive in the several wells drilled elsewhere in the region.

In 1912 an important discovery was made near Hartford in Ohio County and located on one of the domes on the south flank of the Rough Creek anticline. At 1,776 feet production was found in the "Corniferous" in the "old Hartford pool," which resulted in a mild excitement. More specifically, this production is in the Niagaran (Silurian). Eastern operators came to the scene, but the more attractive excitement in Oklahoma called them westward. Four or five wells produced about 200,000 bbls. of Corniferous oil before personal difficulties and water intrusion resulted in abandonment.

In 1929, at Island in McLean County, a test in the "Corniferous" (Devonian) filled to the top and flowed. Deeper drilling brought water and it was abandoned after producing at the rate of 12 bbls. per day. In other places throughout the large area under discussion, the high percentage of "Corniferous" oil showings is noteworthy.

At least four places are known where migrated "Corniferous" oil is produced from the shallow sands in the Chester group. The oil has no doubt flowed upward along fault lines to find lodgment in the shallow sands. In one place near Heflin on the Rough Creek anticline in Ohio County, a well 427 feet deep has produced 35,000 bbls. of Corniferous oil. The depth of the Corniferous formation is estimated at 2,300 feet.

The Barrett Hill pool, located on one of the domes of the Rough Creek anticline, has produced over 1,250,000 bbls. of oil from sands in the Chester group. A high percentage of this oil appears to be migrated "Corniferous" oil. A deep well drilled in that pool, however, failed to find the "mother lode."

It is a curious fact that the earliest discoveries were made in the "Corniferous" after which interest completely lapsed because of the less costly development in the shallow sands.

A large amount of preliminary study is likely to be made, including the making of surface structural maps and isopatch maps showing the nature of the Mississippian and Devonian-Silurian formations as far as can be known. Perhaps 100 or more "deep" wells may be drilled before sufficient data can be coordinated to reduce the hazard in finding the reserves which are the object of the search.

A regional analysis of the number of test wells drilled prior to discovery of commercial pools in United States would show some surprising figures. For instance, in Roane County, West Virginia, it is said that 600 wells were drilled before the first discovery was made, the Blue Creek field. In Sedgwick County, Kansas, 52 deep tests preceded the finding of the first pool, Valley Center. In eastern Kentucky, hundreds of wells were drilled prior to the discovery of the important pools in the "Corniferous" of Estill and Lee counties. Here in northwestern Kentucky the "earmarks" are unmistakable.

A history of the producing record of the "Corniferous" in eastern and south central Kentucky would be of particular interest for publication at this time. It has yielded many millions of barrels of high-grade oil and may be an index of what may be anticipated in the region under discussion.

Drilling Costs

Drilling costs will average about $2 per foot in the softer Chester formations and about $3 in the Mississippian, where the lower black limes are particularly hard. The casing problem is easy because caving is not a feature and open hole may be safely carried after 200 feet of the Lower Mississippian has been drilled.

The business center for oil development in northwestern Kentucky in Owensboro, a thriving city of 29,000 people where tobacco, whisky and radio tube manufacture flourishes. The supply houses represented include the National, the Jarecki, the Frick-Reid and the Oil Well. The area is served by three pipe line companies, the Illinois (Ohio Oil Co.), the Fordsville Gathering Lines (Standard Oil Co. of Ohio) and the "Producers," a local organization which ships its purchases to Louisville by water transportation on the Ohio River. The current crude price is $1.40 per barrel, and there is no restriction of production.

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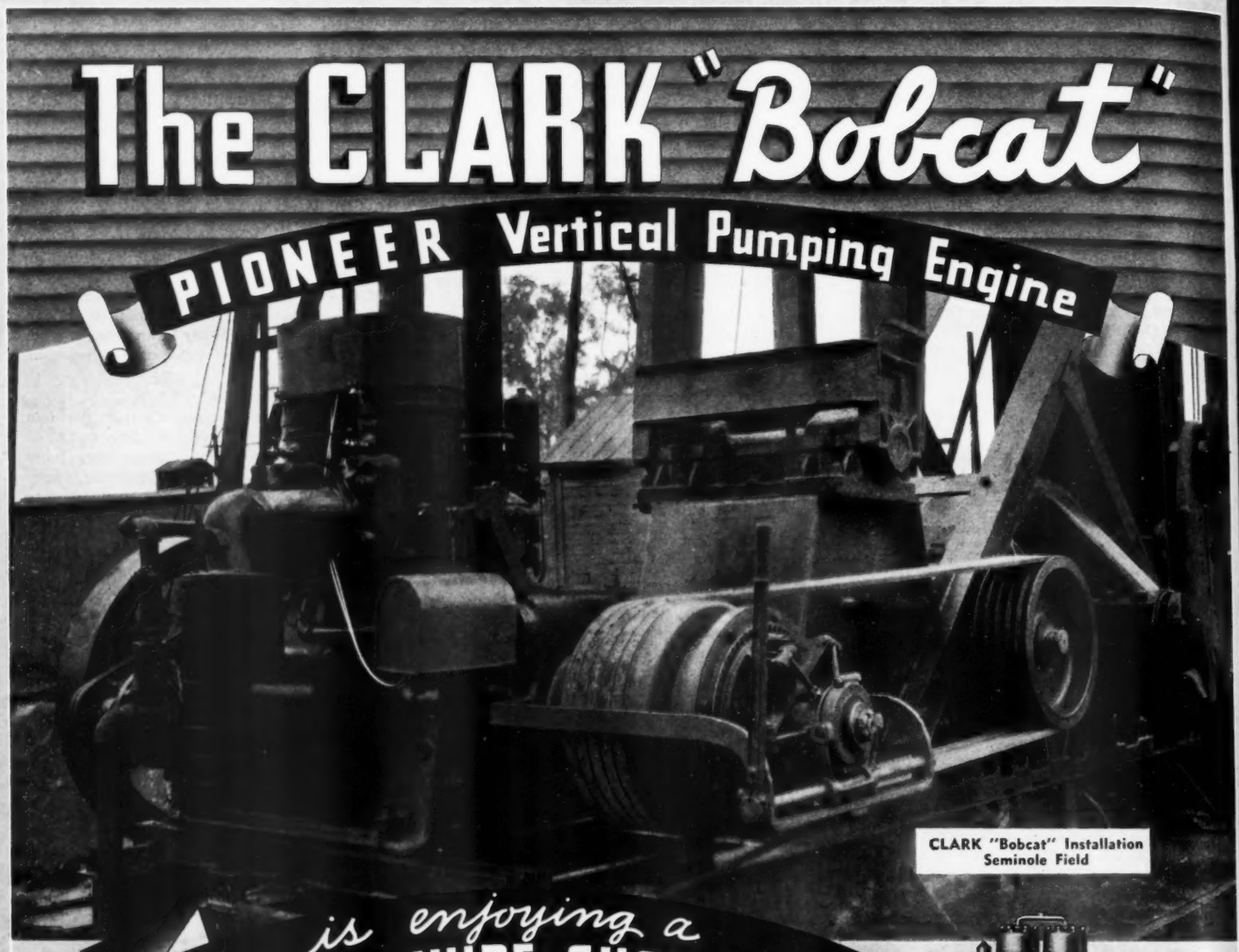

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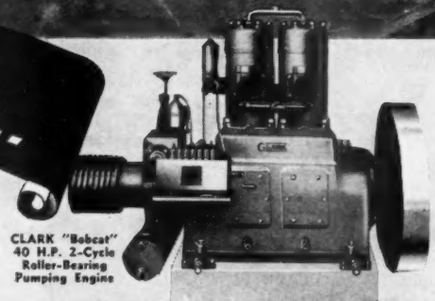

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Installation
East Texas Field

CLARK "Bobkitten" 20-30 H.P. 2-Cycle
Roller-Bearing Pumping Engine

FIELD OPERATIONS

Summarizing the Week's Developments

In Coastal Louisiana a new salt dome was discovered in the Timbalier area, Lafourche Parish. There are 27 wildcat wells drilling in the Coastal area. A 1,754-bbl. well was completed at 10,054 feet in Jefferson Davis Parish. In southern Arkansas a third producing horizon was uncovered in the Schuler field in Union County. The discovery well in the 5,600-foot horizon was deepened to 7,688 feet and gas estimated at 50,000,000 to 75,000,000 feet and distillate estimated at over 600 bbls. a day was developed. The Buchner field in northwestern Columbia County, Arkansas, is definitely regarded as a commercial oil field after further tests of the discovery well.

TEXAS

New producing sands were opened in the Lower Gulf Coast fields and pools extended there and in the Southwest Texas areas. The Fault Line Zone in the San Antonio district has prospects of two new pools. In Eastern Texas the second test in the Opelika district developed a surprising gas flow when plugged back from its total depth. The gas was mudded in because of so much open hole. Leasing in West Texas has shifted from the northern to the southeastern counties of Tom Green, Coke, Sterling and Concho. Drilling operations have fallen off in the West Texas area. Two extreme wildcat tests in the northern part of the area were dry but the Duggan field in Cochran County was extended a mile. The new pay in the Avoca field, Jones County, proved short-lived in the discovery well, which is being drilled deeper.

NEW MEXICO

The well reported in the Harding pool in Lea County, New Mexico, as an 1,800-bbl. producer increased its production to 2,800 bbls. a day on a proration test.

KANSAS

Two wildcats in Sumner County, Kansas, were showing as Wilcox sand pool openers, one in section 2-30-4w, and one in section 7-30-1e. A new producing area was assured for Barton County in section 10-17-13w, south of the Ainsworth pool. A wildcat in section 34-32-3e, Cowley County, gave promise of opening a new sand pool. The Bemis field of Ellis County was extended one-fourth mile eastward.

OKLAHOMA

Two wells with potentials of 4,875 and 3,140 bbls., respectively, were completed in the Billings pool, Noble County, Oklahoma, but a wildcat 1 mile east of the pool was dry and abandoned. The south end of the Lucien field in Logan County was further defined by a dry hole in section 4-19-2w, but another well in the same section made a potential of 2,709 bbls. of oil. Intrusion of water in a previously promising wildcat in Murray County was a feature of the week.

ILLINOIS

Sixteen new oil wells were added to the Central Basin fields of Illinois in the past week. One important test in Clay County was dry in the regular pay horizon in that district and will be deepened.

CALIFORNIA

E. H. Moore and Union Oil Co., drilling in separate spots, opened a new productive area in the Santa Maria field in Santa Barbara County, California. The North Belridge field was extended a mile, and the most southerly completion in the Ten Section field proved to be a 2,656-bbl. producer.

Completions in All Fields

(Week Ending October 23, 1937)

	Oil	Gas	Dry	Total	1937 total comp. to date	1936 total comp. to date
N. Y., Pa., W. Va.	84	17	9	110	3,656	3,154
Ohio	9	7	8	24	964	626
Indiana	0	0	0	0	87	155
Kentucky	7	2	6	15	536	252
Illinois	16	0	0	16	199	33
Michigan	11	0	4	15	647	684
Kansas	48	2	12	62	2,133	1,374
Oklahoma	27	3	11	41	2,212	2,161
Texas:						
North Central Texas	31	0	15	46	2,307	2,261
West Texas	46	0	4	50	2,194	1,292
Texas Panhandle	13	5	1	19	635	543
East Texas	52	0	2	54	1,933	2,146
East Central Texas	13	0	5	18	587	300
East Texas Border	2	0	0	2	282	107
Gulf Coast Texas	27	1	4	32	1,272	1,019
Southwest Texas	41	1	21	63	2,676	2,350
Total Texas	225	7	52	284	11,886	10,018
North Louisiana	12	0	4	16	538	567
Gulf Coast Louisiana	6	0	2	8	370	343
Total Louisiana	18	0	6	24	908	910
Arkansas	3	0	1	4	132	75
Montana	3	1	1	5	188	202
Wyoming	2	0	0	2	89	96
Colorado	0	0	0	0	17	23
New Mexico	10	0	0	10	594	472
Utah	0	0	1	1	3	5
California	33	2	6	41	1,242	937
Total United States	496	41	117	654	25,493	21,117
Total previous week	477	40	129	646		
Difference	19	1	12	8		

Outstanding Fields—Highlights

(Week Ending October 23, 1937)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Hastings	8	19	11	6,564	345	20,389
McCampbell	2	14	5	990	73	3,556
Saxet	2	20	4	560	554	42,490
Benavides	6	12	4	805	79	5,700
East Texas	50	94	52	2,258	26,771	486,000
Talco	3	33	7	2,019	515	33,600
Ector County	11	101	11	9,986	678	31,500
Winkler County	10	42	13	8,470	1,464	44,700
OKLAHOMA						
Fitts	3	34	7	1,569	906	79,325
Billings	1	7	2	1,951	53	7,400
KANSAS						
Ellis County	4	38	8	8,414	229	8,690
Barton County	13	55	6	2,812	242	10,540
Russell County	13	49	11	11,518	906	35,550
Rice County	7	36	8	3,158	1,005	39,745
NEW MEXICO						
Lea County	16	116	10	6,761	1,502	94,040
LA-ARK-TEX						
Rodessa, Ark.	7	26	3	2,930	26	13,602
Rodessa, La.	5	8	1	97	414	44,281
Rodessa, Tex.	5	23	1	300	353	28,620
Lisbon, La.	2	10	3	3,300	136	5,372
Jennings, La.	1	14	1	650	73	12,939
MICHIGAN						
Buckeye	10	56	9	3,550	262	25,945
CALIFORNIA						
Wilmington	4	27	8	5,024	291	60,346
ILLINOIS						
Central Illinois	29	99	16	3,506	160	15,348

Eastern Field Report

By STAFF CORRESPONDENT

OLD FIELDS PRODUCE A FEW GOOD WELLS; FAIR GASSERS

PITTSBURGH, Pa., Oct. 25.—Thirty-four operations were completed in the lower eastern fields during the past week. Nine were dry holes, 17 gas wells and eight producers with an initial production of 296 bbls. a day. In Pennsylvania, one well was completed through the Oriskany sand and it was a dry hole.

SOUTHEAST OHIO

In section 26, Wayne Township, Columbiana County, the Natural Gas Co. of West Virginia is casing at 6,125 feet in the Desselem deep test.

In Coshocton County, R. D. Tetlow completed No. 3 C. E. Moore in section 8, Pike Township, in Clinton sand at 3,372 feet. It will make 3 bbls. a day.

In Knox County, Kundtz & Hulse, Inc., completed No. 3 Lovey A. Stone in section 10, Jackson Township. It was drilled to 3,203 feet in the Clinton sand and will make 100 bbls. a day.

In Muskingum County, the Hope Construction & Refining Co. completed No. 4 Almeda Butler in section 5, Licking Township, at a depth of 3,211 feet in the Clinton sand. It is good for 80 bbls. a day.

In Noble County, J. T. Watson and others completed a test on the Elmer Bond farm in section 23, Seneca Township. It is a gas well in Berea sand, completed at 1,483 feet, and gauges 112,000 feet a day.

In Perry County, Preston Oil Co. completed No. 1656 Sunday Creek Coal Co., section 35, Coal Township, at 3,540 feet, in the Clinton sand, and it was dry. In the northwest quarter of section 33, Monroe Township, the Thistle Oil Co. completed No. 28 R. Drake in the Berea sand at 1,052 feet. It is good for 5 bbls. a day. In the same township, SW quarter section 30, the Kachelmacher Estate completed No. 20 Hemlock Coal Co. at 3,695 feet in the Clinton sand. It is showing for 100 bbls. a day.

SOUTHWEST PENNSYLVANIA

In Amwell Township, Washington County, Manufacturers Light & Heat Co. deepened No. 1 Ella Johns. The Fifth sand was 3,091-3,121 feet. The total depth was 3,127 feet and it was dry.

In North Strabane Township, McClelland Bros. drilled a dry hole on their fee lease. The Fifth sand was at 2,674-2,700 feet.

In South Franklin Township, the South Penn Oil Co. completed No. 2 Piedmont Coal Co. at 2,985 feet. It is a gas well gauging 1,500,000 feet a day in the Fifth sand.

Greene County Drilling

In Aleppo Township, Greene County, Union Gasoline & Oil Corp. resumed drilling No. 5 T. M. Gallentine. They are down 2,424 feet. J. G. Cochran is drilling 1,400 feet in No. 4 John Strope.

In Center Township, Carnegie Natural Gas Co. has reached a depth of 3,414 feet in No. 2 J. H. Orndoff. The Fifth sand was 3,400 feet with a show of gas and oil at 3,409-3,410 feet. The well is showing for 25 bbls. a day. This same company is drilling at 2,100 feet in No. 3 J. W. Milliken. A rig is being moved in for No. 3 J. H. Orndoff. The Rutan Oil Co. is drilling at 1,825 feet in No. 4 C. T. Harvey. Charles Mong is drilling 2,300 feet in No. 2 John Metz (Weir lease).

In Dunkard Township, Convex Glass Co. is drilling at 1,690 feet on No. 1 Jerome VanVoorhis. In Morris Township, William Smith and others are drilling No. 1 Phillip Fonner heirs at 1,950 feet. In Richhill Township, O. I. Dille and others are drilling at 2,208 feet in No. 1 J. M. Phillips. J. L. Blair is rigging up to drill No. 10 W. J. Bryan. Smith McCracken is drilling No. 1 Hughes at 1,500 feet. In Washington Township, Equitable Gas Co. is drilling at 680 feet in No. 1 Pratt Yeager. In Wayne Township, Manufacturers Light & Heat Co. is down 669 feet on the J. N. Johnson land. Equitable Gas Co. is drilling No. 4 S. C. Brock at 330 feet. Peoples Natural Gas Co. is drilling No. 2 Louis Park at 3,145 feet. The Bayard sand was at 3,106-16 feet with a show of gas at 3,112 feet. Eddy & Johnson are moving in a rig to drill No. 2 Maple heirs.

Washington County Drilling

In Amwell Township, Carnegie Natural Gas Co. is down 1,265 feet in No. 4 N. B. Redd. They have a rig on location for No. 1 P. W. Reynolds. At No. 1 F. M. Closser they are hauling in a rig. The Union Gasoline & Oil Corp. is shut down testing No. 8 A. O. Van Kirk. The Gantz sand in this well was at 2,638 feet with gas at 2,649-56 feet. It gauged 739,000 feet but soon blew down to 512,000 feet.

In Morris Township, Duquesne Gas Corp. is drilling No. 8 Carter heirs at 2,063 feet. In North Strabane Township, Keystone Gas Co. is drilling at 1,840 feet in No. 1 Beabout. In Peters Township, R. M. Duddin & Co. is fishing in No. 2 W. J. Johnson at 160 feet. In South Franklin Township, Carnegie Natural Gas Co. is drilling at 405 feet in No. 3 Alberta Iams. Dunn-Mar Oil & Gas Co. is drilling No. 4 J. T. Baldwin at 1,740 feet. New Oil & Gas Co. is rigging up to drill No. 3 Clarissa Ramsey.

Deep Tests

In Shenango Township, Lawrence County, Carnegie Natural Gas Co. completed its test on the W. A. Currie farm at a depth of 4,845 feet. The Oriskany sand was at 4,634-4,648 feet and showed neither water nor gas.

In Hampton Township, Allegheny County, the South Penn Oil Co. is still fishing in the Christian Z. Schove well.

In Mount Pleasant Township, Washington County, Norwood P. Johnson and others, on the James McBurney farm, have completed their fishing job and are now underreaming the hole 30 feet below the bottom of the casing. The pipe is going down without difficulty and drilling will be resumed shortly.

In South Union Township, Fayette County, the Potter Development Co., William Snee and others are drilling No. 2 Summit Hotel at 1,900 feet. In South Union Township, Frank Fairman and others on the Louis Vardell farm are still shut down at 900 feet.

In South Beaver Township, Beaver County, John T. Galley is drilling No. 1 James Tennis heirs at 700 feet.

WEST VIRGINIA

In Gilmer County, West Virginia, McCall Drilling Co. completed No. 1 Clark Fling at a depth of 2,255 feet in the Big Injun sand. It will make 1 bbl. a day. This well is in Dekalb district. In Ritchie County, Hill & Kuhn completed No. 1 F. B. Kerns in Grant district at a depth of 1,777 feet in the Big Injun sand. It is good for 6 bbls. a day.

Gas Wells

In Boone County, Huntington & Oklahoma Gas Co. completed No. 1 Floyd Brewer in Warfield district, in Brown shale. It is a gas well gauging 134,000 feet a day. In Washington district the Pond Fork Oil & Gas Co. completed a dry hole in No. 20 Cole & Crane.

In Braxton County, the Pittsburgh & West Virginia Gas Co. completed No. 7634 A. J. Wright in Birch district. It is a fair gas well gauging 1,275,000 feet a day. The Salt sand was at 1,246 feet with gas at 1,253-78 feet. The total depth was 1,280 feet.

In Calhoun County, McIntosh & Grimm completed No. 2 Seymour Settle in Sherman district. It is a fair gas well in the Berea sand gauging 1,400,000 feet a day and also shows for 2 bbls. of oil a day. It was completed at a depth of 2,302 feet. In Washington district, Boggess & Starcher completed a test on the E. R. Wilson farm at 2,218 feet in the Big Injun sand. It is a gas well good for 1,000,000 feet a day and shows for 8 bbls. of oil.

In Gilmer County, Carnegie Natural Gas Co. completed No. 5 Despard heirs in Center district. The Maxton sand was at 1,882-1,908 feet with gas at 1,895-1,900 feet. It is a gas well gauging 190,000 feet a day and was completed at 3,508 feet. In Troy district, Massey & Jarvis completed No. 1 F. B. Wilfong at 1,620 feet. The Big Injun sand was at 1,524-1,615 feet with gas at 1,592-1,600 feet. It is a small gas well.

In Lincoln County, the Rich Fork Gas Co. completed No. 1 Croft Land Co. in Jefferson district, and it is a gas well. In Sheridan district, Henderson Gas Co. completed No. 1 Leverne Lucas at a depth of 3,250 feet. The Brown shale was at 2,825-3,197 feet with gas at 2,791-3,210 feet, gauging 67,000 feet a day. In Carroll district, Blue Ridge Gas Co. deepened No. 1 W. E. Madden heirs. The Brown shale was at 2,930-3,270 feet with gas at 3,150 feet and total depth at 3,181 feet. It is a small gas well.

In Pleasants County, W. F. Carmichael completed No. 1 Inez Carmichael, in Union district, at 961 feet in the Salt sand, and it was a dry hole.

In Ritchie County, McDougal Farm Oil Co. completed a dry hole, No. 2 Jefferson Barnard, in Clay district. The total depth was 1,875 feet in Big Injun sand. In the same district, Clifton Oil & Gas Co. completed a test on Maggie V. Garner land. It gauges 400,000 feet a day from the Big Injun sand, total depth 1,855 feet. In Grant district, Devil Hole Oil & Gas Co. completed No. 2 Rutherford heirs at 1,795 feet in the Big Injun sand and it was dry. In Murphy district, C. A. Jarvis completed No. 1 Charles Kennedy and it is a gas well gauging 225,000 feet a day after shot. The Third Salt sand was at 1,542-98 feet with gas at 1,564-66 feet and the total depth was 1923 feet. In the same district Prather Oil & Gas Co. completed No. 3 Andrew Prather. It is a gas well and gauges 261,000 feet a day from the Big Injun sand. The total depth is 1,837 feet.

In Wayne County, Owens Illinois Glass Co. completed a test on the Glenhayes Co. in Lincoln district. The Big lime was at 1,086-1,278 feet with gas at 1,228-39 feet. The Brown shale was 1,912-2,899 feet with gas at 1,921 and 2,894 feet and total depth 2,903 feet. It gauges 744,000 feet a day. In Union district, the Kentucky-West Virginia Gas Co. completed a test on P. W. Sansom farm. The total depth is 3,474 feet. It gauges 220,000 feet a day.

Oriskany Gas Field

Three new locations were made in the Sissonville field in the Poca district, Kanawha County. The West Virginia Gas Corp. made a location on the O. A. Van Dine and others lease three-quarters of a mile north of Sissonville. The United Fuel Gas Co. and the United Carbon Co. have located No. 1 Eulah Miller, 2 miles southeast of Sissonville. Mullins Gas Co. has located No. 1 Della M. Faber and others, 1 mile east of the town.

In Elk district, Kanawha County, the Columbia Carbon Co. is drilling at 4,810 feet on the Robert N. Orth farm. Same company's test on the Nellie M. Sleeth farm topped Oriskany sand at 4,943 feet with a show of gas and oil at 4,950 feet. It is drilling at 4,964 feet. The Nora J. Fogarty test is drilling at 5,124 feet. On the J. W. Jones farm Columbia Carbon Co. is drilling at 4,905 feet. It has rig up on the B. F. Jones land. In the same district Poca Oil & Gas Co. is drilling at 4,929 feet in No. 2 David M. Canterbury. The Pond Fork Oil & Gas Co. is down 5,143 feet on the Crowder & Thomas lease. Benedum & Trees, on the S. B. and L. D. Pauley land, are drilling at 4,914 feet.

In the Poca district, United Carbon Co. on the H. F. Miller land reached the Oriskany sand

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California Field Report

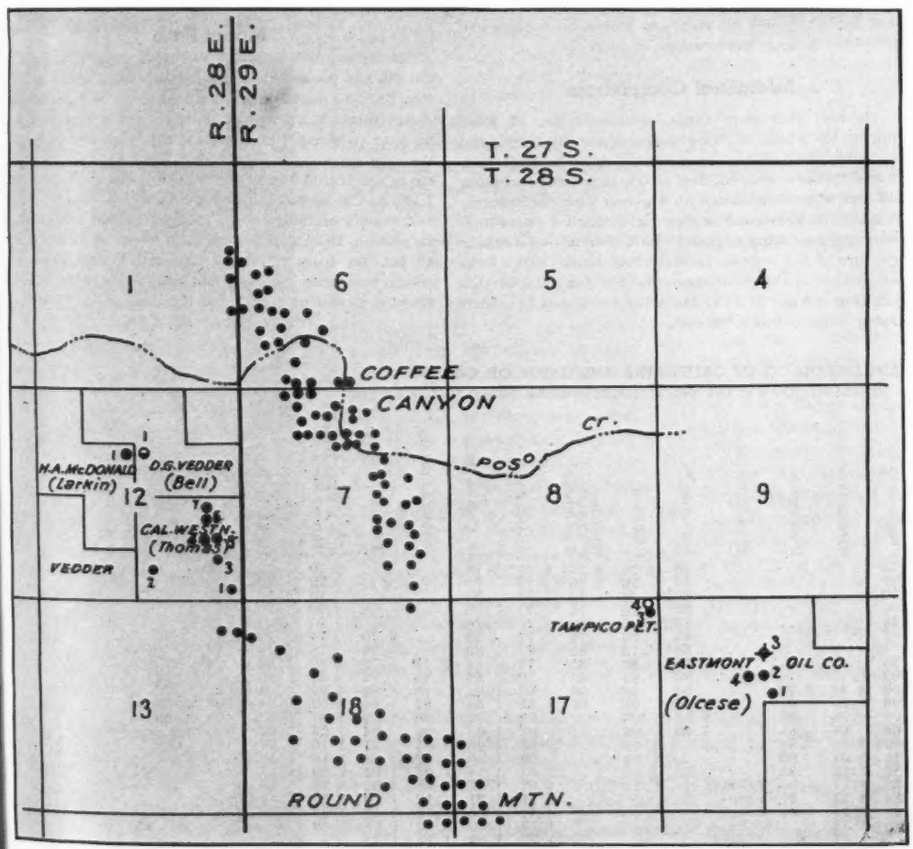
By
L. P. STOCKMAN

FIND NEW PRODUCTIVE AREA IN SANTA BARBARA COUNTY

LOS ANGELES, Calif., Oct. 25.—The average number of drilling wells in 1937 will be the largest since 1930 and there is a strong possibility that the number of new wells completed may be second only to the peak of 1,238 new wells completed in 1924.

California operators finished more new wells in the first nine months of 1937 than during the 12 months of last year and this gain was likewise reflected in the aggregate initial daily production of new wells for the respective periods. A total of 886 new oil and gas wells were completed in the first nine months as compared with a total of 802 for the entire year of 1936. The aggregate initial daily production of new wells for the same periods was 462,705 bbls. and 374,002 bbls. daily respectively. Active producing wells which have shown a consistent increase for the past several months reached a new peak in September, 1937, when a total of 13,245 wells were actually producing. There are an additional 4,754 wells capable of producing but which are shut in as a conservation measure and to enhance the existing proration program. Some of these wells have been suspended since 1925 as it was found possible at that time to shut down entire properties held in fee where there was no drainage factor to be considered.

Drilling operations are expected to show a substantial increase within another few weeks due primarily to the lifting of drilling restrictions in the Long Beach section of the Wilmington field, extension of productive limits of the El Segundo field and development work in the Santa Maria Valley field and in the new productive areas discovered in the Mount Poso and Round Mountain areas. The delay in lifting drilling restrictions in the Long Beach section of the Wilmington field has retarded drilling operations but operators will no doubt make up for lost time after the statutory deadline of November 10, 1937, as all plans have been prepared in advance and will be submitted to the harbor department within another week or 10 days. In many cases roads have been constructed and drill sites prepared as this was not prohibited, and all that remains to be done is to secure the necessary permits and start operations. This section of the Wilmington field is expected to yield a number of producers that will show large initials and if the productive area proves as large as anticipated we may see the erection of another 100 derricks within 60 days after drilling operations are permitted. The Santa Maria Valley field will show increased development due to the large undrilled acreage and the several new productive areas in Mount Poso and Round Mountain will sustain additional drilling because these wells which are completed at relatively shallow depths and show initials averaging around 250 bbls. daily represent a profitable undertaking.



D. J. Vedder and H. A. McDonald are believed to have discovered a new productive area northwest of California Western Oil Co.'s operations along the northern limits of the Round Mountain field of Kern County, California. These wells are located along faults which in several instances are only about 1 mile long but of sufficient intensity to trap oil along the south side

Santa Maria Valley

Union Oil Co. and E. H. Moore, Inc., have apparently discovered a new productive area in the Santa Maria field of Santa Barbara, as each has completed an outpost in an area about 3 miles west of the nearest production. Field reports indicate that Union Oil Co. has leased about 1,000 acres from the Donavan estate about 3 miles west of the new productive area found by E. H. Moore and Union Oil Co. but does not contemplate immediate development. E. H. Moore No. 2 Union Sugar, one of the new wells which extended production, was completed pumping 350 bbls. of 15.3-gravity oil daily from 5,103 feet. Union Oil Co. discovery well was No. 2 Le Roy, brought in doing 260 bbls. daily from 5,334 feet. The latter well has not been officially completed as the company will undertake some corrective work in order to overcome a water problem. E. H. Moore, Inc., is preparing to begin drilling operations in No. 3 Union Sugar in section 24-10-35 and has new rigs up for No. 4 Union Sugar in section 19-10-34 and No. 5 Union Sugar in section 25-10-35. Navy Oil Co. has staked location for four new wells to be drilled in section 29-10-34 and Signal Oil Co. is rigging up rotary drilling equipment in one new well and has staked locations for three additional wells in section 26-10-34. In the older section of the Santa Maria Valley field, Ohio Oil Co. has completed No. 2 Moretti in section 21-10-34 pumping 248 bbls. of relatively clean 16.1-gravity oil daily from 4,031 feet.

Lost Hills-Belridge

The Texas Co., by completing No. 1 Martin flowing 2,650 bbls. of clean 35.1-gravity oil and 5,600,000 feet of gas per day from 8,446 feet, extended the productive limits of the North Belridge field almost a mile northwest. This new well, in section 22-27-20, was finished with 613 feet of 5-inch liner including 285 feet of perforated landed on bottom. Rig is up for No. 2 Martin and plans call for spud within a week. Tide Water Associated Oil Co. has started work on an offset to the Martin lease and Belridge Oil Co. has begun work on two offsets. Richfield Oil Co. is building rig for No. 1-A in section 22-27-20. Operators in this field are concentrating attention on developing of the Wagonwheel zone of probable Eocene age, and are passing up the Temblor zone as the former is far more productive. This field has a large potential but operators are wisely curtailing to a degree many times greater than the general average curtailment. In the Lost Hills field Standard Oil Co. is rigging up to pump in No. 4 United, and is rigging up rotary drilling equipment in No. 5 United, preparatory to an early spud. The Texas Co. has landed casing in No. 2-27 Theta in section 2-26-20 and should have this potential producer tanking oil within another week. Tide Water Associated Oil Co., discoverer of this production in the extreme western end of the Lost Hills field, has temporarily suspended drilling operations.

Greeley-Ten Section

Shell Oil Co. has extended the productive limits of the Ten Section field of Kern County by completing No. 61-31-B Kern County Land, flowing 2,656 bbls. of clean 35.6-gravity oil and 2,170,000 feet of gas per day from 8,241 feet. This well is in section 31-30-26, the most southerly producer in the field. It is flowing through two 1-inch flow beans, and shows a tubing pressure of 160 pounds and a casing pressure of 400 pounds. In conformity with the policy of the company production will be pinched back approximately 50 per cent. In No. 8-28-A Kern County Land Shell is down 7,704 feet and the company has spudded No. 36-A Kern County Land in section 30-30-26. In the Greeley field

of Kern County, Standard Oil Co. completed No. 12-2 Kern County Land in section 16-29-26, flowing 4,180 bbls. of clean 27.3-gravity oil daily from 7,640 feet after the hole had been carried down to 7,711 feet and plugged back because of bottom water. This well, producing 1,700,000 feet of gas per day along with the oil, was finished with 105 feet of 6⅝-inch perforated liner landed at 7,639 feet. In addition to the four strings of tools in operation Standard Oil Co. is preparing to begin drilling operations on two additional wells. A few miles northwest of the Greeley field, Union Oil Co. is working on an exceptionally promising well and may open up a new oil field as 62 feet of good-looking oil sand has been cored. This sand has excellent porosity and permeability and the crew is running in an aluminum liner preparatory to an early production test. This well, which is believed to have logged the Vedder zone, may bear watching during the next week or 10 days. Gas pressure has necessitated use of heavy weight material but the crude oil extracted from core samples looks to be about 18 gravity whereas the Greeley and Ten Section fields produce a light refinable oil.

Wilmington

Production of the Wilmington field is expected to show a substantial increase next month as Standard Oil Co. expects to have its new Wilmington pipe line completed within another fortnight and thus should begin moving crude oil out of the area. The new crude oil price schedule which Standard Oil Co. posted for the Wilmington field ranging from 75 cents per barrel for 14-gravity oil to $1.21 per barrel for 30-gravity and above should have a tendency to strengthen the fuel oil price even though many of the producers continue to sell to smaller refiners without curtailing. Standard's new purchase contracts for Wilmington crude oil call for a curtailment of 20 per cent and this appears to be about the maximum that could be expected. Production of this field in spite of the large penetration in the oil sand has shown a substantial decline and it is significant to note that many of the new wells completed during the past several months have been rather small. This decline has not become evident in the eastern end of the field where General Petroleum Corp. and Union Pacific Railroad are developing their holdings on an acreage basis. The decline in the town lot area has become so pronounced that several operators have made plans to deepen some of their producing wells in order to determine the possibility of increasing production. The first deep test, Royalty Service Corp. No. 842-2 Gilmore failed to result in large production and consequently it remains to be seen whether the town lot area contains deeper productive zones.

Union Pacific Railroad Co., holder of the largest amount of undeveloped acreage and which has pursued an aggressive offsetting campaign, headed the completion list during the current week by completing four new wells which showed an aggregate initial production of 1,752 bbls. Two of these wells were completed in two zones and at last reports production from the Ranger zone had not cleaned up and consequently is not contained in the total initial recorded. These multiple zone wells were No. 55, flowing 571 bbls. from the Terminal zone, and No. 57, flowing 580 bbls. daily from the same horizon. It is customary to flow production from the Ranger horizon into sump for a week or more as it requires about this time to clean up. No. 55 was bottomed at 3,460 feet and No. 57 was finished at 3,436 feet. The company's No. 41, bottomed at 3,436 feet, was brought in flowing 346 bbls. of 16.3-gravity oil cutting 3 per cent daily from the Terminal zone. The 6-C completed flowing 255 bbls. of 18.1-gravity oil daily from 3,495 feet was finished with a combination liner. A string of 8⅝-inch was hung at 3,029 feet and perforated at 2,927-3,007 feet and then a 6⅝-inch liner carrying perforations at 3,064-3,234 feet, 3,254-3,367 feet, 3,387-3,430 feet, and at 3,450-3,493 feet was landed on bottom and cemented through perforations at 3,057 feet.

Additional Completions

General Petroleum Corp. completed No. 22 Ford flowing 1,979 bbls. of 29.2-gravity oil per day from 4,080 feet after the hole had been carried down to 4,233 feet. It was finished with 157 feet of 6⅝-inch liner including 118 feet of perforated and an 8⅝-inch with perforations at 3,531-3,915 feet and is flowing through a 56/64-inch bean under a tubing pressure of 275 pounds and a casing pressure of 875 pounds. General Petroleum Corp.'s next completion in this field should be No. 5-A Ford as this well is in the pay at 3,467 feet with a string of 11¾-inch casing cemented at 2,490 feet.

Bankline Oil Co. completed No. 18 P.T.C. flowing 492 bbls. of 20.2-gravity oil daily from 3,310 feet. This company is making preparations to begin drilling operations on four new wells on the D. H. C. property and one of this quartet should begin making hole within another 10 days. Sonwell Oil Co. has completed its No. 12 flowing 430 bbls. of clean 17.3-gravity oil daily from 3,636 feet and the crew from this well has been moved to No. 10 scheduled to be spudded within a week. There are at present four probable deep tests under way in the town lot area and there is a possibility that several additional tests may be started down in the near future. One of these, No. 1 Ronan of Pacific Western Oil Co., is being cleaned out after the crew had pulled the flow string and liner.

Mount Poso

In the Mount Poso district of Kern County, Vanguard Oil Co. has succeeded in completing No. 9 Baker in section 33-27-28 pumping 352 bbls. of clean 16.1-gravity oil daily from 1,712 feet and preparations are under way to spud in No. 8 Baker within the next few days. In the new productive area found north of the northern tip of the Mount Poso field, Ring Oil Co. completed No. 2 Shapiro in section 32-26-28 pumping 348 bbls. of clean 16.2-gravity oil daily from 1,725 feet and No. 29-4 Bowles in section 29-26-28 pumping 359 bbls. of 16.4-gravity oil per day from 1,744 feet. The latter well was a recompletion after the hole had been cleaned out. No. 2 Shapiro picked up the top of the productive Vedder at

(Continued on Page 150)

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	October 14 — Total this week	October 14 — Daily average	October 7 — Total last week	October 7 — Daily average	This year to date	Same time last year
Intercoastal-domestic:						
Crude oil	.....	.....	.....	.....	129,788	.....
Diesel and gas oil	.....	.....	.....	.....	176,726	151,541
Gasoline	.....	.....	77,850	11,121	3,451,783	5,295,506
Kerosene	.....	.....	.....	.....	328,907	968,157
Foreign exports:						
Crude oil	419,162	59,880	297,434	42,491	11,973,723	7,471,122
Fuel oil	237,091	33,870	296,564	42,366	11,483,675	8,204,701
Diesel and gas oil	73,727	10,532	30,542	4,363	6,085,623	4,484,701
Gasoline	.....	.....	239,293	34,185	6,536,151	6,194,991
Kerosene	.....	.....	129,628	18,518	1,875,941	1,254,659
Lubricants	.....	.....	.....	.....	12,984	.....
Other unfinished oil	64,663	9,238	.....	.....	974,785	132,908
Coastwise-domestic:						
Crude oil	178,941	25,563	192,556	27,508	4,181,995	5,567,912
Fuel oil	152,384	21,769	464,811	66,402	12,254,685	8,345,357
Diesel and gas oil	4,429	633	22,575	3,255	1,795,158	935,406
Gasoline	251,391	35,913	357,618	51,088	12,412,784	9,880,417
Kerosene	4,274	611	.....	.....	317,399	143,305

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil	.....	.....	.....	.....	152,932	.....
Gasoline	.....	.....	.....	.....	25,778	227,419
Kerosene	.....	.....	.....	.....	72,750	.....
Asphalt	62,491	8,927	.....	.....	413,885	267,431
Lubricants	.....	.....	.....	.....	25,522	43,543
Foreign exports:						
Crude oil	75,980	10,854	146,957	20,994	2,459,574	2,465,113
Fuel oil	20,810	2,973	.....	.....	1,758,156	2,218,439
Diesel and gas oil	15,036	2,148	.....	.....	2,472,520	1,560,291
Gasoline	110,198	15,743	98,783	14,112	4,308,815	2,991,074
Kerosene	.....	.....	8,921	1,274	787,814	554,531
Lubricants	1,945	278	956	137	458,698	273,237
Other unfinished oil	.....	.....	.....	.....	.....	90,923
Coastwise-domestic:						
Fuel oil	74,268	10,610	131,256	18,751	5,201,090	5,270,019
Diesel and gas oil	39,414	5,631	35,187	5,027	1,086,521	566,855
Gasoline	208,787	29,541	180,747	25,821	4,298,974	4,114,358
Kerosene	.....	.....	25,486	3,641	250,432	165,498

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.

Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Santa Paula*	Orcutt*
14-14.9	$ 80	$ 79	$ .74	$ 78	$ .79	$ 80	$ .76	....	....	....	$ .80	$ 76	$ .76	$ 77	$ 78	....	....	$ 70	$ 70	$ .70	....	....	$ 70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	$ 70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.71	70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	....	.82	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.73	72
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	....	.85	.76	.78	.77	.78	....	$ .70	.74	.74	.71	$ .70	....	.75	74
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	....	.88	.78	.82	.77	.80	....	.70	.78	.78	.72	.70	....	.77	77
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	....	.91	.80	.85	.77	.84	$ .78	.73	.82	.82	.74	.70	....	.79	80
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	....	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	....	.82	83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$ .84	$ .79	....	.96	.88	.93	.82	.92	.78	.80	.92	.90	.82	.76	....	.85	86
24-24.9	.99	.91	.80	1 00	1 02	1 06	.99	.88	.81	....	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	....	.87	88
25-25.9	1 03	.95	.82	1 03	1 05	1.11	1 03	.93	.83	....	1.02	.95	....	.89	.99	.86	.88	1 01	.98	.90	.83	....	.90	91
26-26.9	1 06	1 00	.85	1 07	1 09	1.16	1.06	.98	.86	....	1.05	.98	....	.92	1 03	.90	.91	1.06	1.02	....	....	....	.92	93
27-27.9	1 10	1 05	.88	1.11	1 12	....	1.10	1 03	.88	....	....	1 02	....	.96	1 06	.95	.95	1 10	1 06	....	....	....	.95	....
28-28.9	1 14	1 10	.90	1.14	1.15	....	1.14	1 07	.90	....	....	1 06	....	.99	1 10	.99	.99	1.15	1 10	....	....	....	.97	....
29-29.9	1 17	1 15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	....	....	1.09	....	1 03	1 14	1 03	1 02	1 20	1 14	....	....	....	.99	....
30-30.9	1 21	1.19	.95	1 22	1 21	our	1 21	1 17	.95	F.O.B.	....	....	....	1 07	1 17	1 08	1 06	1 25	1 18	....	....	....	1 01	....
31-31.9	....	....	....	....	1 24	Pipe	1 24	1 22	97	Ship	....	....	....	1 11	1 21	1 12	1 09	1 29	....	....	....	....	....	....
32-32.9	....	....	....	....	1 27	Line	1 27	1 27	1 00	....	....	....	....	1 14	1 25	1 16	1 13	1 34	....	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	1 32	....	$ 1 28	....	....	....	1 18	1 28	1 20	1 17	1 38	....	....	....	$ 1 19	....	....
34-34.9	....	....	....	....	....	....	....	1 37	....	1 32	....	....	....	1 22	1 32	1 25	1 20	....	....	....	....	1 23	....	....
35-35.9	....	....	....	....	....	....	....	1 42	....	1 35	....	....	....	1 25	....	1 29	....	....	....	....	....	1 27	....	....
36-36.9	....	....	....	....	....	....	....	1 46	....	1 39	....	....	....	1 29	....	1 33	....	....	....	....	....	1 31	....	....
37-37.9	....	....	....	....	....	....	....	1 51	....	1 43	....	....	....	1 32	....	1 37	....	....	....	....	....	1 35	....	....
38-38.9	....	....	....	....	....	....	....	1 56	....	....	....	....	....	1 36	....	1 42	....	....	....	....	....	1 39	....	....
39-39.9	....	....	....	....	....	....	....	1 61	....	....	....	....	....	1.40	....	....	....	....	....	....	....	1 43	....	....
40-40.9	....	....	....	....	....	....	....	1 66	....	....	....	....	....	1 43	....	....	....	....	....	....	....	....	....	....

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over. By Standard Oil Co., effective October 15: El Segundo, 14 to 18.9 degrees, 80 cents; 19-19.9, 82 cents; 20-20.9, 85 cents; 21-21.9, 88 cents; 22-22.9, 92 cents; 23-23.9, 95 cents; 24-24.9, 99 cents; 25-25.9, $1.03; 26-26.9, $1.06; 27-27.9, $1.10; 28-28.9, $1.14; 29-29.9, $1.17; 30-30.9, $1.21. Wilmington, 14 to 16.9, 75 cents; 17-17.9, 77 cents 18-18.9, 79 cents; from 19 degrees upward, prices same as Signal Hill.

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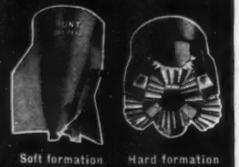
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Among Gulf Coast Drilling Contractors

Smith & McDannald are moving one of their large rigs to the Bay City field in Matagorda County which will be used in drilling a possible 9,000-foot hole for themselves and Houston Oil Co. They have moved to another location at Charenton for the Pan American Production while in the Jennings field No. 3 Community has been spudded for the Shell Petroleum Corp. Drilling continues with eight rigs located at Hastings, South Houston, Louise, Lake Long and St. Martinsville fields for Pure Oil Co., Stanolind Oil & Gas Co. and Tide Water Associated Oil Co.

Nicklos Drilling Co. has moved a large rig to a wildcat prospect in Jefferson Davis Parish for No. 1 Faye, which is being drilled for the Continental Oil Co. Three rotaries are operating at Valentine for the Pan American Production Co., while two other outfits are located at Tepetate and Villa Platte for the Continental Oil Co. The latter rig was used in drilling the discovery well and is shut down awaiting future development plans.

Preparations are being made by H. J. DeArman to test his No. 1 Edmundson, located 6,000 feet west of production in the Sandy Point field in Brazoria County. His No. 3 Fite tested salt water in the regular producing horizon and it is scheduled to be drilled deeper while Stanolind Oil & Gas Co. No. 3 Fite is drilling below 4,000 feet.

Ben (Bud) Coyle has opened a 10,000-foot horizon in the Jeanerette field in St. Mary Parish by the completion of Herton Oil Co. No. 1 Banta Roanes. Production was obtained by perforating the casing at 10,412-24 feet and the well was officially completed for an initial production of 225 bbls. of net oil, along with some salt water. On the north Starks Prospect, drilling continues below 8,400 feet on D. D. Oil Co. No. 2 Lutcher Moore.

George Echols is moving one of his rotaries from the Heyser field to Jackson County where he will drill a test for Cockburn & Hargrove, being No. 1 Strauss, located in the M. Clare Survey. At Heyser he has completed his No. 2 Lander for a good producer, is coring for the 5,700-foot pay at No. 1 Bennett.

Edwards Drilling Co. extended the southwest extension area of the Hardin field in Liberty County with the completion of Woodley Petroleum Co. No. 3 McMurtry, when it flowed 517 bbls. per day through a quarter-inch choke from perforations at 7,585-92 feet. Contract was received from Sinclair Prairie Oil Co. for a shallow test at Damon Mound, while other operations continue with three rigs in Dickinson, Hastings and Lockridge fields for Coast Petroleum Co., McCurdy & Johnson and Humble Oil & Refining Co.

Patrick & Tyrell are completing Merit Oil Co. No. 1 Wright, a wildcat located on the Cedar Bayou Prospect in Chambers County. Perforations were made from 6,424-34 feet and it showed pipe line oil along with some salt water. It continues testing through perforations.

R. B. (Cap) Fields is operating one rig in the Dickinson field for Frank Bennett, while in the Old Jennings field in Coastal Louisiana he has one outfit working for the same operator.

Rutherford Drilling Co. is preparing to deepen United North & South Development Co. No. 1 Lambert in the Buckeye field in Matagorda County, while in the Van Vleck field for the Skelly Oil Co. a protection string of 9⅝-inch casing is being cemented at 8,478 feet preparatory to drilling below 10,000 feet.

Glenn H. McCarthy is completing two wells in the Amelia field for himself and has three rigs running at Palacios for the Atlantic Refining Co. and Sun Oil Co. The latter test is drilling below 10,400 feet.

O. W. Dyer completed one well in the Magnet field for the Atlantic Refining Co. and is rigging up for No. 6-B Cockburn. For the same company along the upper coast, No. 4 Roberts is being completed at Dickinson, while in the lower Gulf Coast district drilling continues in Hidalgo and Aransas counties with five rigs for the same company.

Four wildcat locations were reported in the Gulf Coast district. In Fort Bend County, Chapman Minerals have derrick up for No. 1 Sugarland Industries in the George Brown and Belknap Survey. East of Houston in the Deer Park area, H. C. Cockburn is moving in material for No. 1 White, in the Harris and Carpenter Survey. In Jackson County, Cockburn and Hargrove have derrick up for No. 1 Mike Strauss in the A. M. Clare Survey, while in Polk County Stewart Oil Co. has spudded No. 1 E. J. Galloway in the James Ringgold Survey.

Locations for three additional wildcats, which increases the total number in the district to 27, were made in Jefferson Davis, St. Mary and St. Martin parishes. In the central part of Jefferson Davis Parish and located about 1½ miles west of the Welch field, Humble Oil & Refining Co. has rig up for No. 1 T. S. Stegall in section 20-9s-5w. The other two locations were made by Shell Petroleum Corp. In the Patterson area, southeastern St. Mary Parish, No. 1 Barbour Estate is located in section 21-15s-12e, while in the West Lake area of St. Martin Parish, No. 1 Unit is located in section 11-14s-12e.

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Southwest Texas District

By GEORGE WEBER

NEW PRODUCING SANDS AND EXTENSIONS; TWO PROSPECTS

HOUSTON, Tex., Oct. 25.—Discovery of new producing sands and new outpost producers in lower Coastal fields highlighted the week's activity in Southwest Texas. Besides the new developments in the Corpus Christi district, the Fault Line zone was given indications of two new pools, and the Laredo district, although lagging in drilling activity, shows concentrated development in two fields.

Decrease in the allowable of Southwest Texas pools, particularly those in the coastal belt were drastically cut during the week, but it is not known yet what effect if any the decreased production will have on drilling and exploration in the near future. Since much of the production of the field in that area is moved to foreign markets, and coastwise shipments account for most of the remainder, reinstatement of former allowables or small additions to the present figures may be granted as it has in the past.

The McCampbell field of Aransas County and the Luby and Agua Dulce fields of Nueces County attracted chief interest in the coastal area this week, due to important new sands and extensions. In the former field, the Atlantic Refining Co. and others No. 4-B Porterfield, in Block 10, Lot 10, was washing in at latest reports, bottomed in a new sand for the field. The sand, cored at 7,183-86 feet, showed considerable oil, and its bearing on the development of the field may be important as further tests are carried to that level. It underlies the field's present most important sand which is generally encountered at 7,100-7,115 feet. The No. 4-B Porterfield is on the east side of the field but is not an edge test. Another interesting test in that section is Atlantic No. 5-B Porterfield, which has casing set at 7,210 feet. Information concerning this test is not yet available.

A total of five new producers were brought in in the McCampbell field during the past week, four of them in the field's most prolific 7,100-foot sand and the fifth producing in the 6,800-foot horizon. The latter, Atlantic Refining Co. and others No. 1-F McCampbell set casing to total depth of 7,130 feet but plugged back to perforate at 6,785-87 feet and was washing into pits over the week-end, with no gauge. yet reported.

Also in Aransas County, the Lamar field is again active. The field was brought in several weeks ago when the Barnsdall Oil Co. No. 2 Edwards was completed for a wet gasser at 7,502-30 feet. The company has moved back into the No. 1 Edwards, which early in the year blew out at a total depth of 7,996 feet, cratered and died after making gas, distillate, some oil and finally salt water. The workover is at present washing over stuck tubing. The Lamar prospect and gas field is located on a peninsula of that name, about 9 miles northeast of the town of Rockport.

Luby Pool Extended

In Nueces County, the Luby pool is the center of attraction. The area, which received only slight development following its discovery more than three months ago, promises to show good production. It has been extended to the east, south and northwest, and the latest and greatest extension is now washing in to include within the boundaries of the field, acreage lying 1 mile or more to the north of the present production limits.

The extension test is the No. 1 John M. Luby, drilled by the discoverers and principal producers of Luby, Seaboard Oil Corp. Two sands were tested last week in the wildcat. On the first drill stem test, made at 4,346-56 feet, 300 feet of 49-gravity pipe line oil was recovered at a working pressure of 75 pounds. Going deeper operators cored the regular field sand at 5,072-79 feet and a second drill stem test, made at 5,069-79 feet yielded 330 feet of pipe line oil, and 30 feet of mud in 10 minutes at a working pressure of 185 pounds. Seven-inch casing was set at 5,079 feet and perforated at 5,071-74½ feet. At latest reports, the test was cleaning.

Further developments of interest are seen within the producing limits of Luby. The Stanolind Oil & Gas Co. No. 3 McCann, on the southwest edge of the pool, tested a sand at 4,336-47 feet which had been cored before but not tested. On the drill stem test made at 4,331-47 feet, 550 feet of oil was recovered. Operators drilled to the field sand at 5,048-59 feet but recovered only mud and no pressure on a drill stem test at that level. The test is now shut down at total depth of 5,099 feet awaiting orders.

The success of the north outpost test Seaboard Oil Corp. No. 1 John M. Luby lends importance to a second wildcat which is being started in the vicinity of the Luby field. The Richardson Petroleum Co. have spudded on No. 1 Cunningham, NW cor. S half section 77, about 5,800 feet northeast of the Seaboard No. 1 Shaefer. Discovery of oil in this test would add considerably to the importance of Luby, and the wildcat will be watched with unusual interest by operators concerned with the oil development of the section.

New Pay in Agua Dulce

In Nueces County, and located several miles to the northwest of Luby, the Agua Dulce field was enhanced in importance this week, by completion of a good producer in a new sand. The Texon Drilling Co. No. 2 Eliff, located on a 3,054-acre tract in the Longorio Grant, in the Agua Dulce field, cored the new horizon at 6,637-68 feet. Casing was set on the sand and perforated at 6,659-64 feet. The test made too much gas through those perforations, so following a squeeze job, the casing was reperforated at 6,363-68 feet and completed for an initial production of 140 bbls. per day of distillate together with a large amount of gas. Tubing pressure on flow through a five-sixteenths inch choke was 2,300 pounds and casing pressure was recorded at 2,650 pounds.

In the Fault Line zone, two wildcats were showing at the week's end for possible new field discoveries. In Guadalupe County, about 2½ miles southeast of the Darst Creek field, and 14 miles east of Seguin, the wildcat, Carver & Ellison has a show of oil in the Taylor at 2,585 feet. The test, No. 1 Rumpf, located in the Burman Survey, ran about 350 feet higher than other tests which had been drilled in the vicinity. Casing was set at 2,571 feet and when plugs were drilled, the test tried to blow out, making considerable oil. It was last reported shut in.

The Branyon area gained further importance during the week by completion of the semiwildcat, C. O. Burgin No. 1 Mebane, located 1 mile southwest of the town of Lockhart. The test came in on the pump making 40 bbls. from total depth of 1,775 feet in the Chalk.

Laredo District

In the Laredo district, activity was concentrated in the Benavides field of Duval County and the Oilton and Killam fields of Webb County. Other fields are quiet, and wildcatting is fairly active. In Webb County, located about 4 miles south of the busy Oilton field, and within a mile of the Mirando City field, O. W. Killam is drilling No. 1 Garcia, offsetting a test which recently showed oil. The first test, Adams & Lefevre No. 1 Garcia, tested oil and drilling mud at 1,856-66 feet and encountered salt water after perforating casing at that level. The test was abandoned, but the area is not to be condemned until the results of the Killam test are known.

In the lower Rio Grande Valley, the LaBlanca field of Hidalgo County gained a new producer, extending production one-half mile to the north. The Dee Davenport No. 2 Swallow, located on the Clyde Fennis Land Co. Survey, made 80 bbls. of oil through a three-eighths inch choke with tubing pressure of 2,500 pounds and casing pressure of 3,100 pounds. To the southeast of the field, and located 3 miles southwest of the town of Weslaco the Atlantic Refining Co. No. 1 American Rio Grande, a deep wildcat is drilling below 7,600 feet, and will go 8,300 feet on contract.

N. Y.-Penna. Gas Fields

COUDERSPORT, Pa., Oct. 25.—There were no completions in the New York-Pennsylvania Oriskany sand gas fields in the week in review but two new locations were reported bringing the total of operations in these fields to 34, 15 of which are in the new Woodhull field where 10 wells have been completed without a failure.

Both of the new locations are in the Woodhull field of Woodhull Township, Steuben County, New York. Southwestern Development Co. is building the rig on the Earl Brown farm, 553 feet from the south line and 440 feet from the east line. Sylvania Corp. is digging cellar for a test on the John Allen farm, midway between the east and west farm lines and 500 feet from the south line.

Pennsylvania Operations

Potter Development Co. is shut down in its test on the Crawford farm, Keating Township, Potter County, at 6,062 feet and is cleaning out at 5,576 feet on the Haupt farm, West Branch Township, same county.

Five other Potter County wells are drilling: G. L. Cabot, Inc., at 4,971 feet on the R. Johnson farm, Bingham Township; P.P.&.L. Co. at 4,892 feet on the G. M. Whitman farm, Harrison Township; New York State Natural Gas Co. at 665 feet on the A. D. Marble farm and at 885 feet on the A. Schofield No. 2 farm, both in Harrison Township, and Ward Wasson at 1,750 feet on the R. B. Hall farm, (elevation 2,188 feet). Genesee Township.

G. L. Cabot, Inc., has a location staked on the Orwin & Carlson farm, Wharton Township, and French and others are shut down at 400 feet on the Mary Webster farm, Genesee Township, Potter County.

Two of the four Warren County wildcat tests are now shut down: Kane Industrial Gas Co. at 4,450 feet on Lot 515, Watson Township, and Updegraff at 4,498 feet on the C. E. Erickson farm, Elk Township. In the other tests, Evjen and others are drilling at 3,550 feet on the Dusenberry farm, Watson Township, and Belmont Quadrangle Drilling Co. at 430 feet on Lot 487, Pleasant Township.

H. C. Drilling Co. is shut down at 4,770 feet on the Van Scoy farm, Hamilton Township, McKean County, where a large show of gas dwindled to a few hundred thousand feet with the encroachment of salt water. McKenry and others are reported to have resumed operations on the wildcat test on the Stellman farm, Rockland Township, Venango County, which was temporarily abandoned at 3,950 feet months ago.

New York Operations

Current status of the Woodhull field operations, other than the two new locations reported this week, follows:

Belmont Quadrangle Drilling Co. is drilling at 2,886 feet on the L. S. Johnson farm. Williamsport Oil & Gas Co. is drilling at 1,550 feet on the Della Lampson farm. Southwestern Development Co. has location staked on the J. Seeley farm. New York State Natural Gas Co. is casing hole on the H. J. Tubbs farm drilled to 3,828 feet. Same company has rig up on the Chester L. Bonham farm and location staked on the Charles Finch farm. Hanley & Bird is drilling at 375 feet on the No. 1 E. H. Ackerman. G. L. Cabot, Inc., is shut

(Continued on Page 152)

North Louisiana, Arkansas

By MITCHELL TUCKER

SCHULER'S THIRD PAY GOOD FOR LARGE GAS PRODUCTION

SHREVEPORT, La., Oct. 25.—Southern Arkansas remained the center of attention last week, as important developments occurred along three fronts; namely, opening of deeper production in the Schuler field (now the third producing level); testing of Standard Oil Co. of Louisiana's new field opener near Buchner, Columbia County; and increasing daily production and activity in Rodessa, Miller County, Arkansas.

RODESSA

Daily average of the tristate Rodessa field was 85,903 bbls. last week, of which 13,602 bbls. was in Arkansas, 44,281 bbls. in Louisiana, and 28,620 bbls. in Texas. This represents an increase of 3,004 bbls. for Arkansas over last week, 272 bbls. for Louisiana, and a decrease of 464 bbls. for the Texas side. Averages per day last week were 544 bbls. per well in Arkansas, 107 bbls. per well in Louisiana, and 79 bbls. per well in Texas, or an overall average of 108 bbls. per well per day for the entire field.

The Arkansas Board of Conservation met in special session in El Dorado, Ark., October 22, to hear evidence pending their decision on whether or not to invoke some sort of proration measures in the Arkansas portion of the Rodessa field. More than 50 oil men from Louisiana, Texas, and Arkansas, were present. O. C. Bailey of El Dorado, chairman of the board, announced that an early decision on this matter may be expected.

The Rodessa field was among those in Texas which received a cut in daily allowable for November, amounting to 7,329 bbls. November allowable on the Louisiana side has not been announced.

RODESSA COMPLETIONS

Texas Canadian Oil Co. No. 1 Dickson, SE NW section 11-20-28, Miller County, Arkansas, flowed 50 bbls. hourly from 12 feet of pay section, total depth 6,103 feet. Gauge was through one-half inch tubing choke after a 3,000-gallon acid treatment.

McClanahan and others No. 3-A Capps, NE NW SE section 11-20-28, Miller County, Arkansas, flowed 1,207 bbls. in 17 hours through 1-inch tubing choke on initial test, total depth 6,050 feet.

F. W. Burford No. 1 August, S half SE SW section 8-20-27, Miller County, Arkansas, swabbed 50 bbls. daily after second acid treatment, total depth 6,164 feet. This well extended the Arkansas, Rodessa, field 2½ miles to the east of former production.

R. W. Norton No. 7 Starke, NW section 17-23-16, Caddo Parish, Louisiana, flowed 100 bbls. daily through one-eighth inch tubing choke, total depth 5,985 feet.

Bay Oil Co. No. 3 Cobb, G. Crowder Survey, Cass County, Texas, flowed 12 bbls. hourly through one-quarter inch tubing choke, total depth 6,108 feet.

Union Production Co. No. 7 Bewley, H. Holbert Survey, Cass County, Texas, on the southern peak of the Rodessa structure, was completed as a gas well, gauging 2,500,000 feet under restricted choke, rock pressure 1,400 pounds, total depth 5,990 feet.

Rodessa Deep Test

Fohs Oil Co. made the first deep Pettit lime test in the Lodi extension of Marion County, Texas, in their No. 2 Mary McReynolds, A. D. S. Coy Survey. The Pettit lime was topped at 6,577 feet and yielded only salt water after being penetrated to a total depth of 6,687 feet. The hole is being plugged back to 6,014 feet for completion in the Lower Glen Rose upper beds.

LOUISIANA

Caddo Parish

W. D. Chew No. 2 Spell, NE SE section 29-21-15, near the flank of the old Caddo field, flowed about 400 bbls. daily, total depth 1,522 feet. No. 3 Spell, NE SW SE of the same section, is being rigged up.

W. D. Ambrose No. 4-B Pender, section 11-20-15, flowed 150 bbls. daily, total depth 2,204 feet, in the Caddo field.

D. C. R. Oil Co. No. 1 Sibley, NW SW section 15-19-14, pumped 15 bbls. daily on completion test, total depth 2,725 feet.

In the Pine Island field, Stanolind Oil & Gas Co. No. 128 Dillon, NW section 13-21-15, pumped 5 bbls. daily, total depth 1,650 feet.

Claiborne Parish—Lisbon Field

Three completions were recorded at Lisbon last week, bringing total producers there to 136. Gulf Refining Co. continues to take less than half the field's allowable daily through their pipe line in the field, its only outlet at present. Work is being rushed on Caddo Pipe Line Co.'s new 6-inch line into the field, which should give the producers there some relief by November 1.

Atlantic Refining Co. No. 5 F. B. King, section 35-21-5, flowed 35 bbls. hourly through three-fourths inch tubing choke after acidizing with 5,000 gallons, total depth 5,219 feet. Their No. 1-C Patton, flowed 70 bbls. hourly through three-fourths inch choke after a 3,000-gallon acid treatment, total depth 5,187 feet.

Sugar Creek Field

Plans are said to be nearing completion for the drilling of a 9,500-foot deep test of the Permian lime on the Sugar Creek structure soon by the Sugar Creek Syndicate, operators for this unitized oil and gas field. Their No. 2 Darrett, section 31-20-8, was drilled to a total depth of 8,616 feet last year and established several lower gas producing zones before the hole was lost and had to be plugged back to upper levels.

Lincoln Parish

T. L. James No. 1 J. J. Spence, wildcat test on the flank of the Montcalm structure, SW NE section 11-17-4, missed the Fowler sand entirely, and has been plugged and abandoned after drilling to a total depth of 7,023 feet.

Red River Parish

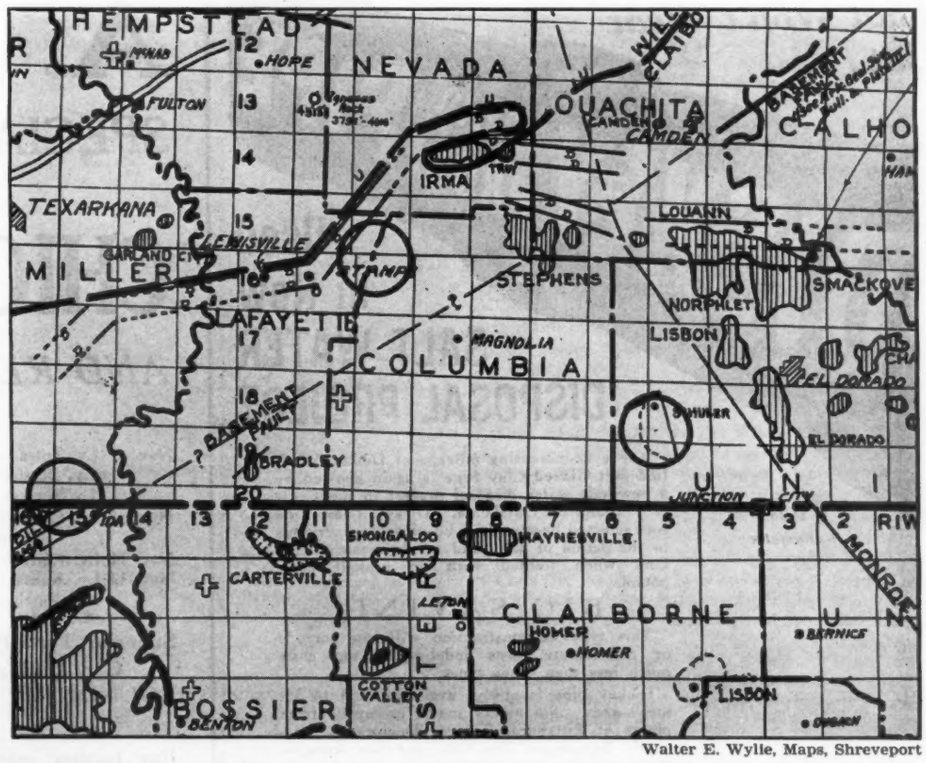
W. J. Hunter No. 2 Long Bell Lumber Co., SW NW section 20-19-9, failed to make a producer from the reported oil showings, and has been abandoned at a total depth of 3,604 feet.

T. G. Shaw No. 5 Wilkinson, NW SE SE section 4-12-10, on the eastern edge of the Bull Bayou field, pumped 52 bbls. per day on initial test, total depth 2,812 feet.

In the northern edge of the Zwolle field, Odell Henson No. 1 Long Bell Lumber Co., SE NE NW section 5-8-13, pumped 5 bbls. daily initially, total depth 1,811 feet.

Union Parish

Joe Modisett No. 1 Frost Lumber Co., section 14-21-1e, wildcat test of the area, showed salt water only on drill stem test from 2,388 to 2,436 feet. At a total



Walter E. Wylie, Maps, Shreveport

Southern Arkansas holds the center of attention in the Ark-La-Tex area. Circles indicate new field discoveries or extensions, reading from left to right: Rodessa, Arkansas field, extended 2½ miles east; new Buchner field opened last week by Standard Oil Co. of Louisiana; and active Schuler field, where three separate producing levels have been opened. Base map from H. D. Easton's index map

depth 3,075 feet, operations have been temporarily shut down.

Estimated Daily Production

Estimated daily gross production all companies week ending October 22, 1937:

NORTH LOUISIANA

	Barrels
Bellevue	800
Caddo light	3,805
Caddo heavy	2,580
Converse	650
Cotton Valley heavy	400
Cotton Valley light	*3,925
DeSoto and Red River	1,490
Elm Grove	390
Haynesville	3,110
Holly	85
Homer	2,460
Lisbon	5,365
Pleasant Hill	130
Rodessa	44,280
Sarepta-Carterville	315
Sligo	250
Sugar Creek	400
Urania	2,740
Zwolle	685
Total	73,900

SOUTH ARKANSAS

Champagnolle	1,305
El Dorado	1,940
Lisbon	280
Miller County	480
Nevada	735
Rodessa	13,600
Schuler	7,220
Smackover light	2,080
Smackover heavy	17,010
Stephens	575
Troy	565
Urbana	1,165
Total	46,955

Texas side of Rodessa field 28,020 bbls. daily.

*3,465 bbls. is distillate.

Webster Parish

Two new completions were made in the deep Bodcaw sand level at Cotton Valley, which is productive of gas and distillate only. Sixteen other wells are drilling to this 8,100-foot objective at this time.

Ohio Oil Co. No. 1 T. Crichton Account No. 2, SE NE section 21-21-10, flowed 347 bbls. of distillate in 13 hours on initial test through five-sixteenths inch tubing choke, tubing pressure 2,800 pounds, casing pressure 2,900 pounds, gas volume under these producing conditions tested 4,000,000 feet, total depth 8,503 feet. This hole was drilled several hundred feet below the Bodcaw sand for exploratory purposes, but casing was perforated in the 8,100-foot horizon.

Ohio Oil Co. No. 7-B R. L. Holloway, section 23-21-10, flowed 306 bbls. in 16 hours through five-sixteenths inch tubing choke, 5,000,000 feet of gas, casing pressure 3,050 pounds, tubing pressure 2,950 pounds, total depth 8,188 feet.

Winn Parish

Georgetown Oil Co. No. 1 Tremont, section 19-10-1e, an attempted extension to the western edge of the Urania field, was dry and has been abandoned at a total depth of 1,635 feet.

West Carroll Parish

Rodessa Oil & Land Co. No. 1 C. H. Neely, section 19-20-11e, north of the Epps gas field, has been abandoned as dry at a total depth of 2,350 feet.

ARKANSAS

Ouachita County

Copenhaver Oil Corp. No. 1 J. E. Evans, section 20-11-19, has been plugged and abandoned, total depth 1,728 feet.

Columbia County

The Buchner field of northwestern Columbia County was definitely added to the fast growing list of new deep fields in southern Arkansas last week. After seismograph exploration by Standard Oil Co. of Louisiana, their No. 1 J. P. McKean, SW section 8-16s-22w, was drilled. No important showings were logged through the Lower Glen Rose or Travis Peak sections of the Trinity, but a new field has been opened in the upper portion of the Permian "Big Lime." After drilling only 5 feet into this saturated section (present total depth 7,204 feet) casing was set for testing. After swabbing wash water for two days the well began flowing naturally, and as the week closed was averaging 13 bbls. hourly through one-half inch tubing choke, 400 pounds casing pressure, gas-oil ratio 400 to 1, gravity 31.9 degrees corrected. All wash water and mud has been exhausted. Operators are continuing to test this well through different size chokes and under different conditions. It may be drilled a few feet deeper in the Permian.

Union County—Schuler

The third deep producing level in the Schuler field was opened last week to prolific gas and distillate production. First oil production was found in lenticular and irregularly occurring beds of Upper Travis Peak at about 5,600 feet. Eighteen wells were drilled to this level. The second level was opened by E. M. Jones No. 1 Marine Oil Co. in the lower section of the Travis Peak, and yielded an initial gauge of 2,600 bbls. per day, total depth 7,616 feet.

Lion Oil Refining Co., discoverers of the 5,600-foot level, deepened their former discovery well, No. 1-A Edna Morgan, section 18-18-17, through the Travis Peak and into the upper part of the Big Lime (Permian) to open the new gas and distillate horizon. This well also logged thick sections of saturation as found in the E. M. Jones well, but was drilled to the Permian for exploratory purposes. At a total depth of 7,688 feet in the Permian, reported to be topped at about 7,620 feet, casing was set at 7,683 feet and perforated in the upper portion of saturated lime. On 12-hour test this well produced 342 bbls. of 63.1-degree gravity distillate and 10 per cent mud through one-fourth inch tubing choke, tubing pressure 1,550 pounds, casing pressure 2,000 pounds. It is estimated that open flow gas volume would be from 60,000,000 to 75,000,000 feet.

Eight other wells nearby are being rushed to the lower pay levels at Schuler at the present time.

EAST TEXAS (Border Counties)

Panola County

Magnolia Petroleum Co.'s closely watched Lower Marine test near their Lower Glen Rose gas-distillate field, No. 2 Hull, Applewhite Survey, is still attempting to loosen stuck pipe at total depth of 8,717 feet. It has been reliably reported that several heavily saturated zones were cored and drilled through the Lower Marine section.

Danciger Oil & Refining Co. No. 1 J. W. Tatum, Bissell Survey, is preparing to test the several shows reported to its present total depth of 6,514 feet.

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	Lv. Kansas City	9:45 PM
Nov. 8	Ar. Chicago	8:00 AM
	Return Schedule	
Nov. 11	Lv. Chicago	4:00 PM
Nov. 12	Lv. Kansas City	2:30 AM
	Ar. Bartlesville	7:25 AM
	Ar. Tulsa	8:30 AM

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Kansas Developments

By
DAL DALRYMPLE

WILDCATS FIND PAY IN SAND TO OPEN SUMNER OIL AREAS

Exploration for oil and gas continues unabated along a farflung front in Kansas, with many new wildcats being reported each week, although recently there has been a slight decline in drilling activity in proven areas. Three wildcats were completed as oil pool openers and one as a gas pool opener the past week, and other outpost tests gave promise of opening producing areas.

New outpost tests were reported in Barber, Barton, Chase, Elk, Greenwood, Ness, Pratt, Rooks, Russell, Stafford and Woodson counties.

Brouk, Duwe & National Refining Co. No. 1 Gory, NW NW SW section 10-17-13w, wildcat in Barton County, near Hoisington, was due for test and was looking promising as a prospective pool opener. Oil rose 2,800 feet in the hole in 20 hours after it had been cleaned out. It is bottomed at 3,352 feet.

Prospects appeared good for another pool in Cowley County at Pryor & Lockhart No. 1 Brown, NE SE SE section 34-33-3e, wildcat about 4 miles southeast of the Rainbow Bend pool. It topped Burbank sand at 3,362 feet and had a showing of oil and gas when plugs were drilled at 3,362 feet. Total depth was 3,405 feet.

Magnolia Petroleum Co. No. 1 Baird, SW SE SW section 2-30-4w, Sumner County wildcat, swabbed 168 bbls. of oil and 278 bbls. of water in 11 hours from Simpson or Wilcox sand at 4,394-4,401 feet.

Another prospective pool opener in Sumner County was awaiting erection of tankage before testing. It was W. M. McKnab and others No. 1 Blair, SW cor. section 7-30-1e, which had 3,000 feet of oil in the hole from Wilcox sand at 3,866-69 feet.

The Bemis pool of Ellis County was extended one-fourth mile eastward at Cities Service Oil Co. No. 1-A Hall, SW cor. section 14-11-17. It made potential of 1,175 bbls. of oil from Siliceous lime at 3,440 feet.

Wildcat Completions

An important discovery was completed in Ellis County at Earl Wakefield and others No. 1 Burnett, NW NW NE section 1-11-18w. It topped anhydrite at 1,310 feet, Topeka lime 2,985 feet, Kansas City lime 3,245 feet, Conglomerate 3,498 feet, Simpson horizon 3,542 feet, Siliceous lime 3,570 feet, total depth 3,574 feet. It swabbed 65 bbls. of oil the first hour, pumped 315 bbls. of oil in four hours, pumped 320 bbls. the next four hours and made potential of 1,890 bbls.

A new area was opened in Butler County at Arthur Brewer No. 1 Starkey, SW SE NE section 16-30-4e, completed for potential of 191 bbls. of oil after a shot. Top of Bartlesville sand was 2,768 feet, first oil 2,784 feet, total depth 2,802 feet.

The Ness County discovery of Newton Development Co. and others No. 1 Tenny, NW NW SE section 19-18-25w, finally was listed as a completion at total depth of 4,450 feet. After acidizing it pumped 50 bbls. of oil in 24 hours and pumped off, and has been pumping about 50 bbls. of oil daily for some time. Gravity of the oil was 42.1 degrees. Top of Anhydrite was 1,185 feet, Topeka lime 3,510 feet, Kansas City lime 3,852 feet, Conglomerate 4,044 feet, lime 4,050 feet, pay 4,380½ feet.

In Grant County, R. K. Wilson No. 1-20 Bank, C NE section 20-28-37w, produced 7,000,000 feet of gas to open a new sector and was completed at 2,685 feet, total depth.

Seibel No. 1 Kirschner, C N half NE NE section 3-26-15e, Woodson County, had Mississippi lime at 1,517 feet and was dry and abandoned at 1,498 feet, total depth.

Steinle No. 1 Kash, SE cor. section 4-26-15e, wildcat in Woodson County, topped Mississippi lime at 1,517 feet and was dry and abandoned at 1,570 feet, total depth.

Roxana Drilling Co. and others No. 1 Woodson, SW NW SW section 26-26-1w, Sedgwick County wildcat, topped Lansing lime at 2,333 feet and was temporarily abandoned at 2,469 feet, total depth.

Ralph Wixson and others No. 1 Buhrle, SE SE NE section 14-16-13w, wildcat in Barton County, topped Siliceous lime at 3,403 feet, had a hole full of water at 3,420-28 feet, and was abandoned at 3,448 feet, total depth.

Fred P. Rust and others No. 1 Johnson, NW NW SW section 9-25-12w, wildcat in Stafford County, topped Siliceous lime at 4,254 feet and was dry and abandoned at 4,278 feet, total depth, with cores carrying a sulfur odor.

W. I. Southern, Inc., No. 1 Davis, SE SE NE section 24-34-15w, Barber County outpost, found Simpson formation at 5,430 feet, Siliceous lime 5,554 feet, water at 5,592-5,600 feet, total depth, plugged back to 4,860 feet, and was dry and abandoned after a shot.

In Kearny County, J. L. Murphy No. 1 Masonic Home, C NE section 1-26-36w, was reported temporarily abandoned at 1,468 feet, total depth.

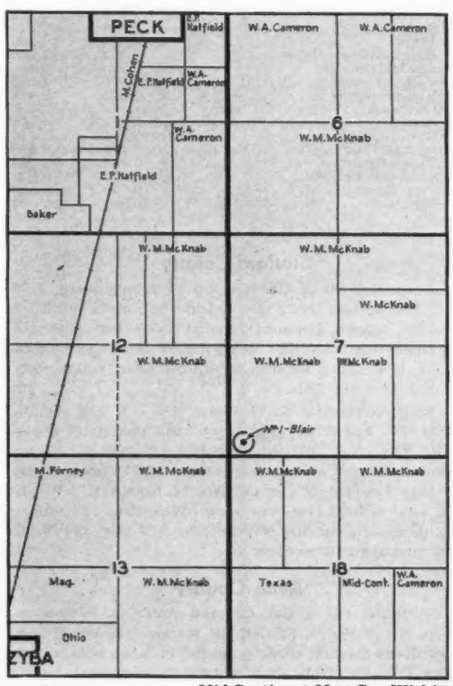
Oread Oil Co. No. 1 Erion Estate, NW cor. section 34-21-7w, was reported as an abandoned location for a wildcat in Rice County.

Barton County

Three wells were completed on the Barton County side of the Trapp field. Phillips Petroleum Co. No. 2 Bitter, SE NE NE section 6-16-13w, had Siliceous lime at 3,331 feet, total depth 3,337 feet, swabbed 280 bbls. of oil in eight hours, was acidized, pumped 514 bbls. in four hours and made potential of 3,087 bbls.

T. C. Johnson No. 2 Bitter, SW SW NW section 8-16-13w, had Siliceous lime at 3,357 feet, was bottomed at 3,369 feet, swabbed 229 bbls. of oil in five hours, pumped 390 bbls. in four hours, earning potential of 2,258 bbls.

Indian Territory Illuminating Oil Co. No. 2 Hoffman, NW NE NE section 1-16-14w, was acidized and pumped 264 bbls. of oil in four hours, making potential of 1,601 bbls. Top of Siliceous lime was 3,266 feet, total depth 3,283 feet.



Mid-Continent Map Co., Wichita

A new sand pool for Sumner County was indicated at W. M. McKnab and others wildcat in section 7-30-1e

In the Ainsworth pool, Stanolind Oil & Gas Co. No. 7 Riemann, SE NW NW section 34-16-13w, found Siliceous lime at 3,394 feet, total depth 3,400 feet, swabbed 12 bbls. of oil an hour, was acidized and made potential of 1,620 bbls. of oil.

Same company's No. 1 Morrison A, SW cor. section 27-16-13w, had a showing of oil and water in Siliceous lime at 3,410-25 feet, total depth and was abandoned.

Same company's No. 5 Riemann, SE SW NW section 34-16-13w, was completed as a water disposal well in Granite Wash at 3,715-61 feet.

Stanolind Oil & Gas Co. No. 2 Schartz, SE SE NW section 2-20-11w, west of the Silica field, topped Siliceous lime at 3,272 feet, was bottomed at 3,290 feet, acidized and made potential of 1,952 bbls. of oil.

Same company's No. 3 Panning, NE SE NW section 11-20-11w, swabbed 40 bbls. of oil an hour before acidizing, swabbed 75 bbls. of oil an hour afterward and earned potential of 2,000 bbls. Top of Siliceous lime was 3,282 feet, total depth 3,292 feet.

New work in Barton County: Stanolind Oil & Gas Co. No. 2 Stuekemann, NW NW SE section 11-20-11w, cellar; same company's No. 6 Panning, SE SE NW section 11-20-11w, rig; company's No. 5 Kowalsky, SW NW NE section 11-20-11w, rig; company's No. 6 Kowalsky, SW NW NE section 11-20-11w, rig; Mid-Continent Petroleum Corp. No. 7 Schmidt, NW NW SW section 36-19-11w, location; National Refining Co. No. 8 McLean, SW SE SE section 25-17-11w, rig; Ohio Oil Co. No. 2 Stettinger, NW NW NE section 1-16-14w, rig; Stanolind Oil & Gas Co. No. 2 Steuder, NE NE SW section 26-16-13w, rig; same company's No. 2 Redetzke, NW NW SE section 26-16-13w, rig; company's No. 1 Kultgen, SW SW NE section 26-16-13w, rig; company's No. 1 Allen, SW SW NW section 25-16-13w, rigging up rotary; Cities Service Oil Co. No. 1 Bitter B, NW NW SE section 8-16-13w, moving in material; Martin and others No. 1 Kultgen, SE SE NE section 17-16-12w, rig; Texas Co. No. 5 Hoffman, SE NW NW section 6-16-13w, drilling at 400 feet.

Russell County

W. I. Southern, Inc., No. 12 Boomhower A, NE NW NE section 30-15-13w, Trapp field, Russell County, had Siliceous lime at 3,265-88 feet, total depth, was acidized and earned potential of 2,267 bbls. of oil. Other Russell County completions of the week follow:

W. I. Southern, Inc., No. 10 Sellens heirs, SE NW SW section 29-15-13w, Siliceous lime 3,212-18 feet, total depth, acidized, pumped 25 bbls. of oil an hour, potential 1,254 bbls.

Transwestern Oil Co. and others No. 1 Boomhower, SE SE SW section 19-15-13w, Siliceous lime 3,286 feet, total depth 3,288 feet, acidized, potential 1,209 bbls.

Cities Service Oil Co. and others No. 5 Bender A, SW NE NW section 25-15-14w, Siliceous lime 3,326 feet, total depth 3,331 feet, acidized, potential 1,436 bbls.

Shell Petroleum Corp. No. 1 Dumler, SW sec. 36-15-14w, Siliceous lime 3,323 feet, total depth 3,347 feet, swabbed 21 bbls. of oil in seven hours, acidized, potential 772 bbls.

Texon Oil & Land Co. No. 2 Letsch, SW NW SW section 26-14-13w, Kansas City lime 2,805 feet, total depth 2,940 feet, acidized, potential 2,601 bbls. of oil.

Ohio Oil Co. No. 1 Boxberger, SE SE NE section 21-14-14w, Kansas City lime 3,009 feet, total depth 3,057 feet, pumped 97 bbls. of oil in 45 hours, acidized, pumped 139 bbls. in four hours, potential 804 bbls.

Stanolind Oil & Gas Co. No. 4 Dortland B, NE NW SE section 5-14-15w, Kansas City lime 3,040 feet, pay

3,069 feet, total depth 3,080 feet, potential 415 bbls. of oil.

Cities Service Oil Co. No. 6 Strecker A, SE NW NE section 35-14-14w, sand 3,178-87 feet, total depth, potential 1,843 bbls. of oil.

Same company's No. 33 Mermis, SE SW NE section 5-14-15w, Kansas City lime 3,043 feet, total depth 3,079 feet, acidized, potential 625 bbls. of oil.

Ohio Oil Co. No. 6 Harbaugh, SW SW NW section 25-14-15w, sand 3,167 feet, pay 3,171-74 feet, total depth, acidized, potential 979 bbls.

New activity in Russell County was reported as follows: Coralena Oil Co. No. 7 Deines, SW NE NE section 36-15-14w, rig; Cities Service Oil Co. No. 6 Bender A, NE SE NW section 25-15-14w, moving in material; Coralena Oil Co. No. 8 H. Sellens, NE NW NW section 30-15-13w, rig; Transwestern Oil Co. No. 3 Boomhower, SE SW SW section 19-15-13w, moving in material; Coralena Oil Co. No. 2 L. Sellens, SE SW SE section 19-15-13w, rig; Transwestern Oil Co. No. 11 William Polcyn, NE NE SW section 11-14-15w, rig; Stanolind Oil & Gas Co. No. 15 Dortland, SW NE SE section 5-14-15w, cellar; same company's No. 19 Benso, NW SW SW section 4-14-15w, rig; Stearns & Streeter No. 6 Miller, SW NE NW section 31-14-13w, drilling at 1,100 feet; Shields and others No. 1 Giese, SE SE NE section 28-14-13w, rig; Mid-Continent Petroleum Corp. No. 3 Letsch, SE SW NW section 26-14-13w, cellar; Texas Co. No. 4 Brandenberg, NE SW NW section 20-14-14w, drilling below 1,450 feet.

Ellis County

One of the larger completions of the week in Kansas was at Deep Rock Oil Corp. No. 21 Baumer, SW NE NE section 27-11-17w, Bemis pool, Ellis County. It had Siliceous lime at 3,414-29 feet, total depth, and made potential of 3,392 bbls. of oil. Other completions in Ellis County were as follows:

Cities Service Oil Co. No. 12 Bemis, NW SW SE section 21-11-17w, Siliceous lime 3,375 feet, total depth 3,400 feet, potential 2,416 bbls. of oil.

Magnolia Petroleum Co. No. 4 Johansen, NW SW NE section 22-11-17w, Siliceous lime 3,460-65 feet, total depth, swabbed 165 bbls. of oil in three hours, potential 2,271 bbls.

Margay Oil Co. No. 5 Bemis E, SW SW NW section 28-11-17w, Siliceous lime 3,463 feet, total depth 3,496 feet, acidized, pumped 178 bbls. of oil in four hours, pumped 196 bbls. in the next four hours, potential 1,071 bbls.

Texas Co. No. 12 Bemis A, NW SE NE section 28-11-17w, Siliceous lime 3,516 feet, total depth 3,543 feet, acidized, pumped 210 bbls. of oil in 24 hours, reacidized, potential 787 bbls.

Lario Oil & Gas Co. No. 7 Marshall, SW NW SE section 36-11-18w, Marshall pool, Siliceous lime 3,621 feet, total depth 3,636 feet, potential 2,149 bbls. of oil.

Republic Natural Gas Co. No. 4 Romine, NW NE NW section 18-11-16w, Siliceous lime 3,307 feet, total depth 3,323 feet, acidized, pumped 339 bbls. of oil in four hours at 3,321 feet, potential 2,498 bbls.

First reports of new operations in Ellis County: Lario Oil & Gas Co. No. 8 Marshall, SW SW SE section 26-11-18w, location; Champlin Refining Co. No. 1 Hadley, C section 29-11-17w, location; Cities Service Oil Co. No. 7 Johansen, NE cor. section 22-11-17w, rig; Ryan Consolidated Oil Co. No. 2 Bemis, SW SE SW section 21-11-17w, rig; Cities Service Oil Co. No. 13 Bemis, SE NW SE section 21-11-17w, location; Blackwell Oil & Gas Co. No. 2 Richmond, SE cor. section 15-11-17w, location; Sinclair Prairie Oil Co. No. 3 Cress, NW SE NE section 13-11-17w, moving in material; Lario Oil & Gas Co. No. 4 Romine, NE NW SW section 18-11-16w, location.

Rice County

Another big producer was completed in the Rice County sector of the Bloomer area at Bridgeport Machine Co. and others No. 2 Habiger, SE NW NW section 5-18-10w. It found Kansas City lime at 2,930 feet, had pay at 3,010 feet, was bottomed at 3,026 feet, acidized, flowed 1,321 bbls. of oil the first four hours, 1,173 bbls. the next four hours and made potential of 7,041 bbls. Gas volume was estimated at 12,000,000 feet.

Other Rice County completions of the week were as follows: Western Kansas Oil & Refining Co. No. 1 Steinbach, SE NE SE section 22-20-6w, had Chat at 3,329 feet, total depth 3,395 feet, swabbed 30 bbls. of oil and 1 bbl. of water in 24 hours; perforated casing 3,329-31 feet, pumped 32 bbls. of oil in four hours, potential 183 bbls. of oil and 30 bbls. of water.

Continental Oil Co. No. 1 Pickerill, NW SW SE section 13-18-8w, Geneseo area, Siliceous lime 3,210 feet, total depth 3,219 feet, acidized, pumped 302 bbls. in four hours, potential 1,817 bbls.

Same company's No. 1 Cramm, SE SE SW section 15-19-9w, Siliceous lime 3,187 feet, total depth 3,201 feet, acidized, pumped 173 bbls. of oil in six hours, potential 302 bbls. of oil with 480 bbls. of water.

Shell Petroleum Corp. No. 1 Reese, NW NW NE section 22-19-9w, Siliceous lime 3,256-72 feet, total depth, swabbed 25 bbls. of oil and 22 bbls. of water in 22 hours; acidized, pumped 232 bbls. of oil in four hours, potential 1,397 bbls. of oil and 6 per cent water.

Atlantic Refining Co. No. 2 Hopkins A, NE SW SW section 6-21-7w, Saxman area, Conglomerate 3,337 feet, total depth 3,342 feet, pumped and flowed 511 bbls. of oil on potential test.

Reserve Development Co. No. 1 Heter, SE SE NE section 1-21-8w, Conglomerate 3,335 feet, total depth 3,364 feet, potential 539 bbls. of oil.

Stanolind Oil & Gas Co. No. 5 Hathaway, NE NE SW section 33-19-10w, Siliceous lime 3,328 feet, total depth 3,353 feet, abandoned.

Texas Co. No. 9 Kleile, NE SE SW section 34-19-10w, Siliceous lime 3,307 feet, total depth 3,313 feet, swabbed 257 bbls. of oil in six hours, acidized, pumped 441 bbls. of oil in four hours, potential 2,617 bbls.

New work in Rice County: Watchorn Oil Co. No. 1 Dubray, NE SW SE section 18-20-10w, location; Sinclair Prairie Oil Co. No. 4 Knopp, SW NW NW section 4-20-10w, rig; Shell Petroleum Corp. No. 4 Hathaway, SW SW NE section 33-19-10w, spudded; Bridgeport Machine Co. No. 3 Habiger, NW NE NW section 5-18-10w, rig; Transwestern Oil Co. No. 6 Moran, NW cor. section 4-18-10w, rigging up tools.

Estimated Daily Production

Estimated daily production of Kansas for the week ending October 23 and for the preceding week was as follows:

	Barrels	
	Oct. 23	Oct. 16
Oxford City	1,325	1,375
Burrton	13,650	14,100
Ritz-Canton	4,775	4,825
Graber	2,725	2,850
Hollow-Nikkel	2,475	2,600
Lerado	2,050	1,875
Voshell	2,325	2,425
Wellington	2,925	3,175
Ellsworth County:		
Lorraine	3,600	4,185
Other pools	1,160	1,350
Rice-Barton counties:		
Bloomer	3,950	5,300
Chase	8,025	8,800
Geneseo	2,275	2,575
Raymond	1,325	1,675
Silica	17,100	17,650
Keesling	925	1,525
Hauschild	1,575	1,225
Miscellaneous Rice	8,520	8,740
Miscellaneous Barton	6,590	7,750
Russell County:		
Fairport	2,000	2,020
Gorham	1,750	1,760
Russell	2,070	2,275
Sullivan	7,995	7,745
Trapp	14,075	14,265
Miscellaneous Russell	7,660	7,860
Sedgwick County:		
Valley Center	1,020	1,050
Miscellaneous	2,535	2,840
Ellis County:		
Bemis	5,325	4,250
Miscellaneous	3,365	2,945
Kingman County	470	570
Stafford County	3,495	3,295
Greenwood County	9,900	9,925
Butler County	16,100	16,300
Other fields	20,820	20,600
Total Kansas	185,875	191,700

Stafford County

Stanolind Oil & Gas Co. No. 3 Spangenberg, NW SW SW section 29-22-11w, Richardson area, Stafford County, topped Siliceous lime at 3,544 feet and was completed at 3,570 feet, total depth. After acid treatment, it swabbed 87 bbls. of oil an hour, making potential of 2,011 bbls.

Same company's No. 1 Wells, NW NW SW section 32-22-11w, had Siliceous lime at 3,612 feet, total depth 3,615 feet, was acidized, swabbed 13 bbls. of oil an hour, reacidized and made potential of 371 bbls. of oil.

Stanolind Oil & Gas Co. No. 14 Komarek, NW SE NE section 30-22-11w, was a rig. Wakefield and others No. 1 Snider, SE SE NW section 3-21-11w, old well, was preparing to deepen.

Reno County

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 4 Moore, SE NE SE section 8-26-4w, Hilger pool, Reno County, made potential of 1,184 bbls. of oil after acidizing Viola lime at 4,026-28 feet, total depth, and was completed.

McPherson County

T. C. Johnson No. 3 Good, NE SE NW section 13-19-3w, Chindberg pool, McPherson County, had Kansas City lime at 2,324 feet, total depth 2,342 feet, acidized, and pumped 105 bbls. of oil and 15 bbls. of water daily.

Continental Oil Co. No. 3 Wenger, SW NW NE section 32-21-1w, was a location.

Butler County

A. M. Landon No. 2 McCaig, SW NE SE section 13-28-6, McPherson County, had a showing of oil at 2,690-95 feet, was bottomed at 2,718 feet where water intruded, plugged back to 2,710 feet, was shot and pumped 40 bbls. of oil daily, completed.

Sedgwick County

Prunty Production Co. and others No. 2 Smith A, SW NW SE section 16-25-1e, Goodrich pool, Sedgwick County, had Misener sand at 3,347 feet, total depth 3,355 feet, acidized, pumped 89 bbls. of oil in four hours, making potential of 539 bbls. of oil, with 960 bbls. of water.

Steinbuchel No. 1 Shaffer, SW SW NW section 18-25-1e, was a rig. Continental Oil Co. No. 2 Westerfield, NE SE SW section 16-25-1e, was a location.

Greenwood County

Arthur Lyke and others No. 6 Beauchat, C N half SW SE section 5-24-12, Greenwood County, topped sand at 1,600 feet, total depth 1,645 feet, and pumped 75 bbls. of oil daily, completed.

Woodson County

C. L. Sheedy No. 1 Corkery, NW NE NW section 29-25-14, Woodson County, found Bartlesville sand at 1,382 feet, total depth 1,420 feet, and pumped 45 bbls. of oil daily, completed.

Harper Oil Co. No. 8 Figge, CWL SW NE section 28-23-14, had Mississippi lime at 1,654 feet, total depth 1,678 feet, was shot and completed as a 10-bbl. pumper.

Pure Oil Co. No. 4 Dewey, NE cor. section 1-24-13, had a hole full of water and was abandoned at 1,917-19 feet, total depth.

New work in Woodson County: C. L. Sheedy and others No. 6 Lee, NW SW NE section 28-25-14, machine; same operators' No. 9 Klick, SW SE SW section 20-25-14, drilling below 750 feet; Ward McGinnis No. 6 Weide, NE NW SE section 31-23-15, machine.

Coffey County

Hinze and associates No. 2 Hanne, SE NE SW section 12-23-14, Coffey County, topped Mississippi lime at 1,574 feet, showed for 1 bbl. of water in Siliceaus lime at 1,691-1,717 feet, total depth, and was abandoned.

Cowley County

Tom Palmer No. 3 David, NW SE SW section 35-30-4, Cowley County, had sand at 2,928-43 feet, total depth 2,945 feet, and made potential of 200 bbls. of oil daily.

Chautauqua County

Sinclair Prairie Oil Co. No. 29 Fulton, SW SE SE section 20-33-12, Chautauqua County, was completed as a 5-bbl. pumper in Peru sand at 933-954 feet, total depth.

Same company's No. 22 Broadbeck, NW NE SW section 31-33-12, was completed as an 8-bbl. pumper at 1,150 feet, total depth. Top of Peru sand was 1,130 feet.

Same company's No. 10 Rodgers, SW SE SE section 19-34-12, had Peru sand at 1,004-15 feet, total depth, and pumped 2 bbls. of oil daily.

C. E. Roth No. 1 Shircliff, NE NE NW section 15-35-11, had a hole full of water and was abandoned in Siliceous lime at 2,109-44 feet, total depth.

Sooby and others No. 1 Davis, SW NE NW section 29-33-10, was a machine.

Grant County

United Production Co. No. 1 Reed, C SW section 1-30-35w, Grant County, produced 6,000,000 feet of gas and was completed at 2,725 feet, total depth.

R. K. Wilson No. 1 Whitson, C section 17-28-37w, was a location.

Other First Reports

Imo Oil Co. No. 1 Pfrehm, C NW NW section 18-31-10, Elk County, was a machine. W. H. Jones No. 7 Walker, W half NW SE section 5-31-10, was drilling below 2,190 feet. Murphy Oil Co. No. 7 Denton, SW NW SW section 3-31-8, was drilling below 2,240 feet.

In Ellsworth County, Skelly Oil Co. No. 2 Zink, SE SW SW section 32-17-10w, was a rig.

In Jewell County, Hollingsworth Brothers No. 1

(Continued on Page 146)

East and East Central Texas

By
L. E. BREDBERG

BIG GAS FROM OPELIKA TEST
UNEXPECTED DEVELOPMENT

DALLAS, Tex., Oct. 25. — Another surprise was sprung in the Opelika area in northeastern Henderson County this week when the Tide Water Associated Oil Co., Seaboard Oil Corp. and Humble Oil & Refining Co. No. 2 McElreath & Suggett, in the W. P. Wyche Survey, showed for a gas producer estimated good for 15,000,000 feet per day at a plugged back depth of 9,255 feet.

The test had been plugged back from total depth of 9,320 feet to test various showings in the hole, and while circulating with fresh water below 5,100 feet the gas started. It built up 1,800 pounds pressure on the casing, but when the well was opened through half-inch choke it showed gas and mud and the pressure dropped to 1,500 pounds. The operators are now killing the well, the gas source not being known as the hole is open from 5,130 feet to 9,255 feet. There was no trace of distillate or oil.

This is the second test on the block held by the three companies, the first making around 9 bbls. of high gravity oil per day from the Glen Rose at 7,185-95 feet, through the drill stem, which was cemented in the hole. This second test failed to pick up production in the same horizon, and had appeared as a failure until this gas production developed.

Grapeland Test

Following the completion of an oil well in the area northwest of Grapeland, in northern Houston County, last week, Alex Frazier of Elkhart filed application for a permit to drill a wildcat on a one-acre tract 2 miles north of Grapeland. The church lot, on which the test is to be drilled, is in the Christian Breece Survey, three-quarters of a mile from the discovery well on the Bean farm, in the William Burks Survey, which was a gas-distillate well. The discovery well of the American Liberty Oil Co. produced 80 bbls. of 48-gravity oil and 48 bbls. of salt water the first 24 hours. Woodbine sand, the producing horizon, was topped at 6,076 feet, and total depth of the hole was 6,087 feet. It will no doubt be responsible for other tests being drilled on the edge of the structure.

Wildcat

One wildcat location was staked in the district in the past week. In Hill County, J. Willis was moving in material on the W. P. Ball farm in the S. Marshall Survey, 3 miles northwest of Covington.

Wildcats Planned

R. F. Rutland and William Abbott, both of Dallas, are planning on drilling a Paluxy sand withcat north of the Sulphur Bluff field in the northeastern part of Hopkins County. It is to be on the Peyton farm in the Burkham Survey, around which the operators hold a large block. Another test in prospect is that of O. W. Killam of Laredo, said to be planning a Paluxy sand wildcat north of the Sulphur River in Delta County.

Probable Abandonment

The American Liberty Oil Co. and E. B. LaRue are expected to abandon their No. 1 Amicable Life Insurance Co. deep test on the LaRue dome in eastern Henderson County. It is in Block 11, P. Jackson Survey, 2 miles west of LaRue. It is now shut down at 7,520 feet waiting for orders. The same operators are drilling a second deep test in this area, on the Breedlove and Mills lands, in the J. Dunn Survey, 5 miles northwest of LaRue. It was first reported as a Woodbine sand test, but will no doubt be carried in quest of Trinity production.

Abandonments

Three wildcat tests were abandoned this week, one each in Houston, Freestone and Hopkins counties, and a dry hole on the north edge of the Talco field in Titus County was reported.

V. A. Hughes and others abandoned No. 1 B. & T. Hardaway, a fault line wildcat test in western Hopkins County, in the William A. Irwin Survey, 3 miles east of Ridgeway. It was dry at 5,014 feet. Elevation is 579 feet. It topped the Georgetown lime at 4,517 feet.

Ridgeway & Jackson abandoned No. 2 Moore, 2 miles southeast of Crockett, in southern Houston County. Total depth is 4,162 feet and elevation is 337 feet.

In Freestone County J. K. Hughes abandoned No. 1 Foster, located in the C. E. Gray Survey, 5 miles southeast of Kirvin. Total depth is 3,995 feet, with an elevation of 460 feet. This test was seeking production in the Woodbine.

Talco Field

Another northern edge well was abandoned in the Talco field on the Titus County side. Humble Oil & Refining Co. completed this failure on the W. A. Black lands, in the R. Winn Survey, offsetting a producer. Total depth was 4,460 feet.

A survey by the Railroad Commission shows that about one-half of the producing wells in the Talco field are producing water. Forty-four of these are on the Franklin side of the field and 232 are on the Titus County side. They are producing over 10,000 bbls. of salt water per day, which adds to the producing costs in the field where practically every well is a pumper.

Repressuring Approved

The Railroad Commission granted permission to the Tide Water Associated Oil Co. and Seaboard Oil Corp. to conduct gas repressuring and recycling experiments in the Cayuga field in northwestern Anderson County. Gas can either be taken from the Woodbine formation or the Glen Rose, the latter having a high gas volume in the two wells already drilled to that formation in the field by the two companies. Repressuring plants will have to be erected to carry out this work in the field.

East Texas Field

During the past 30 days the East Texas field has shown another pressure drop of 12.7 pounds, bringing the average bottom-hole pressure in the field to 1,118.6 pounds.

The Railroad Commission's crews making survey of the field to locate nonproducing "dead" wells, have already uncovered 84 of these, and are looking for more. This number cut the daily allowable by 696 bbls., or the equivalent of the allowable of about 32 other wells.

EAST TEXAS COMPLETIONS
Gregg County

Deep Rock Oil Co. No. 16 Jones, 3,548-77 feet, 20 bbls. in 30 minutes. F.H.E. Oil Co. No. 6 Christian, 3,615-54 feet, 22 bbls. in 20 minutes; No. 6 Jones, 3,646-70 feet, 21 bbls. in 30 minutes. Gulf Oil Corp. No. 86 Judge, 3,528-36 feet, 45 bbls. per hour. Kewanee Oil Co. No. 29 Hampton, 3,560-3,602 feet, 21 bbls. in 15 minutes. O.W.R. Oil Co. No. 4-B Davis, 3,562-92 feet, 60 bbls. in 30 minutes. Stanolind Oil & Gas Co. No. 9 Jones, 3,630-94 feet, 54 bbls. per hour; No. 11-D Tuttle, 3,561-3,619 feet, 64 bbls. per hour; No. 8 Jones, 3,545-3,640 feet, 60 bbls. per hour; No. 17 Hays, 3,517-81 feet, 72 bbls. per hour.

Sun Oil Co. No. 7 Fuller, 3,667-3,716 feet, 24 bbls. in

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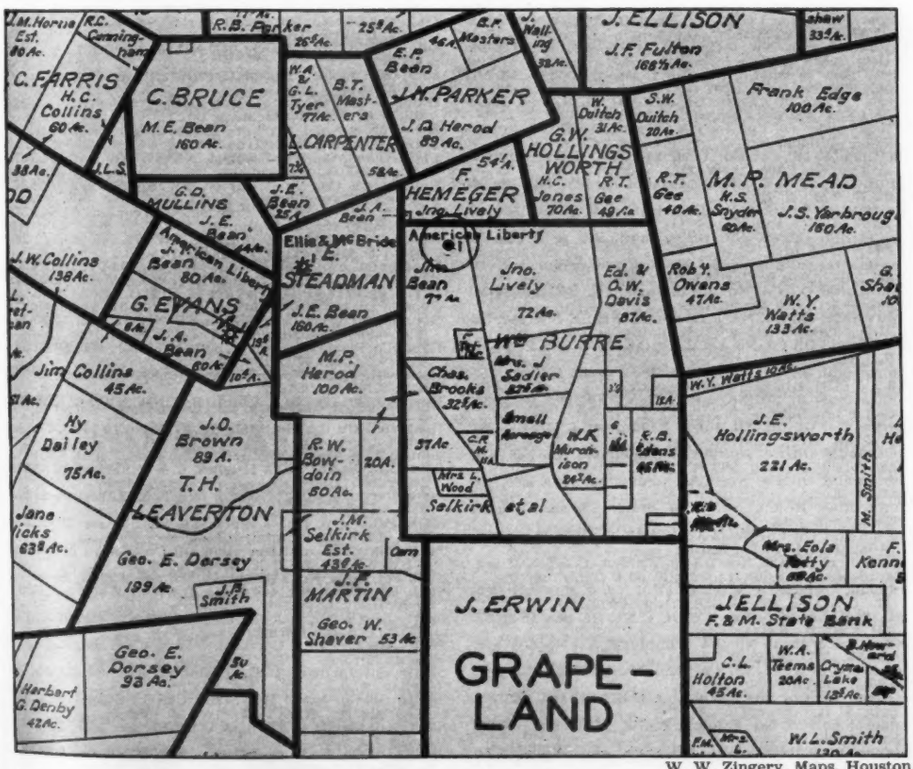


W. W. Zingery, Maps, Houston

Latest well drilled in the Grapeland area in northern Houston County, which has proven an oil discovery instead of merely a gas and distillate producer as the first three tests drilled on the structure proved

Rocky Mountain Area

By
T. R. INGRAM

NEW WELL IN HENRY FIELD INCREASES TO 2,800 BARRELS

DENVER, Colo., Oct. 25.—Deep test in old DeBeque field in western Colorado has considerable oil in hole from 60-foot sand at 2,118 feet. There were no completions or new operations in Colorado.

The Murphy Oil Co. completed an average well in its No. 9 Holst, Quealy dome, in Wyoming. Superior Oil Co. is moving in for important Tertiary test on South Baggs, Carbon County. Continental Oil Co. No. 10 Tom Bell Cattle, in Lance Creek, flowed 163 bbls. in 24 hours through bean on final test. Ohio Oil Co. No. 2 Taylor is shut down for orders on the southeastern flank after drilling through the Minnelusa.

Montana had an important wildcat completion west of the Kevin-Sunburst field in Pfabe & Engleking No. 1 Ennerberg, which marks extension of field or opening of new pool. Kevin-Sunburst has three completions and three new operations. One gas well was completed in Cut Bank and no new wells were started.

One well was abandoned in Carbon County, Utah, in Kelly Young's test in Price district.

Continental Oil Co. completed a 43-bbl. well at 843 feet on the Rattlesnake dome, northwest New Mexico.

NEW MEXICO

Completion of the General Crude Oil Co. and Magnolia Petroleum Co. No. 2-C State, SE SW SE section 16-23-36, in the Henry area northwest of the Cooper pool, Lea County, was a feature of the week in New Mexico oil fields. It topped oil pay at 3,540 feet, was bottomed at 3,697 feet in lime, and flowed 2,880 bbls. of oil naturally through casing in 24 hours, with 10,000,000 feet of gas. First gas was found at 3,535-40 feet. Drilling in this area, previously considered a district of small producers, is expected to be revived as a result of the showing of No. 2-C State.

Gulf Oil Corp. already has staked location for a direct south offset to the big producer at No. 1-E Janda State, NE NW NE section 21-23-36.

Other Lea County completions of the past week were:

Continental Oil Co. No. 1-A-15 Cline, NW section 15-23-37, topped pay at 3,549 feet, total depth 3,860 feet, plugged back to 3,672 feet, and pumped 4 bbls. of oil and 10 bbls. of water daily.

Continental Oil Co. No. 2-B-31 Lockhart, C SE SW section 31-21-36, was acidized and flowed 93 bbls. of oil through choke in 24 hours from pay found at 3,745 feet, total depth 3,872 feet. Gas gauged 1,500,000 feet.

Continental Oil Co. No. 3-A-14 Sanderson, NE section 14-20-36, had pay at 3,780 feet and was bottomed at 3,865 feet. It had natural flow of 72 bbls. of oil in 24 hours, with 250,000 feet of gas.

Cities Service Oil Co. and Repollo Oil Co. No. 2 Brunson, section 3-22-37, flowed 72 bbls. of oil through open tubing in 24 hours from pay at 3,647 feet, total depth 3,725 feet, after a shot. Gas volume measured 1,500,000 feet.

Ohio Oil Co. No. 9 State-McDonald, SW section 16-22-36, flowed 1,800 bbls. of oil through choke in 24 hours after acid treatment. Gas volume was 1,000,000 feet. Pay was topped at 3,775 feet, total depth 3,856 feet.

Republic Production Co. No. 3 Crosby, SE SE SW section 28-25-37, found pay at 3,185 feet and was bottomed at 3,220 feet. It flowed 424 bbls. of oil naturally in 24 hours, with an estimated 2,000,000 feet of gas. It was reported showing some sulfur water.

Rowan Drilling Co. No. 1-A Elliott, SW section 27-22-37, was shot and flowed 96 bbls. of oil in 24 hours through choke, with 200,000 feet of gas. It topped pay at 3,535 feet, total depth 3,665 feet.

Stanolind Oil & Gas Co. No. 8-A Gilluly, C NW SE section 24-20-36, was acidized and flowed 840 bbls. of oil through choke in 24 hours, gas gauging 1,000,000 feet. Production was from pay topped at 3,755 feet, total depth 3,858 feet.

Stanolind Oil & Gas Co. No. 9-A Gilluly, C NE NW section 24-20-36, had pay at 3,770 feet and was bottomed at 3,786 feet. After acid treatment, it flowed 480 bbls. of oil through choke in 24 hours, accompanied by 250,000 feet of gas.

No completions were reported in Eddy County, where activity has been increasing in recent weeks, but several interesting wells were near completion. Emperor Oil Co. No. 3 Puckett, C NE NW section 24-17-31, northeastern part of the county near the Lea County line, was reported spraying 15 bbls. of oil daily from 3,650-65 feet, but had a fishing job at 3,700 feet, total depth.

W. K. Royalty Co. No. 1 State, C SW NE section 16-17-31, was bottomed at 3,378 feet and was reported to have swabbed 62 bbls. of oil in eight hours. It was to be shot.

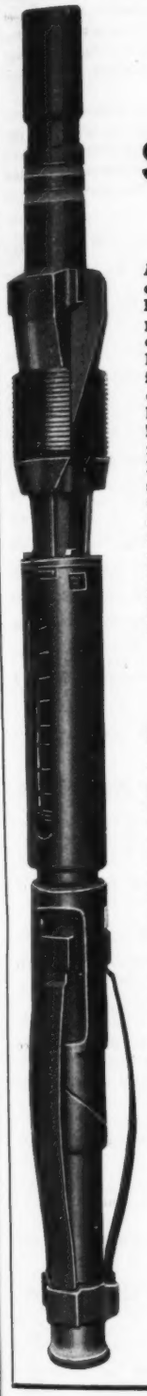
In the Grayburg area, Premier Petroleum Co. No. 1-E Parke, NW SW NE section 21-17-30, was bottomed at 3,423 feet and flowed 170 bbls. of oil in 12 hours after acid treatment.

Red Lake Oil Co. was reported starting a well in SW NW section 21-17-28, 1 mile west of production.

M. A. Grisham was reported moving in machine at No. 1 Claytor, NE section 14-24-26, in southern Eddy County.

Lea County

Amerada Pet. Corp. No. 6 Byrd, SE sec. 12-20-36. Loc.
Amerada Pet. Corp. No. 1 Hare, C SW SW sec. 33-21-37. Drlg. 2,607 ft.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. T.D. 2,585 ft.; set 8-in. 2,573 ft.
Amerada Pet. Corp. No. 1 Stuart, C W½ NW NW sec. 14-25-37. Drlg. 2,146 ft.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-27-37. Drlg. 3,575 ft.
Anderson-Prichard Oil Corp. No. 1 Gregory, NW sec. 33-25-37. T.D. 3,237 ft.; testing.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. T.D. 3,466 ft.; shot; cleaning out.
Anderson-Prichard Oil Corp. No. 3 Langlie, NE sec. 8-25-37. Rigging up rotary.
Anderson-Prichard Oil Corp. No. 1-D Langlie, NE sec. 8-25-37. T.D. 3,290 ft.; W.O.C.
Bradley Oil Co. No. 1 Grizzell, C SW NE sec. 5-22-37. Drlg. 3,118 ft.
Cities Service Oil Co. No. 7-A Closson, C W½ SE NE sec. 6-22-36. Drlg. 2,297 ft.
Cities Service Oil Co. No. 1-H State, C NE NE sec. 17-22-36. T.D. 3,884 ft.; preparing to deepen.
Cities Service Oil Co. No. 1-A Closson, C NE NE sec. 18-22-36. Wildcat loc.
Continental Oil Co. No. 1-B-6 Elliott, C NE SE sec. 6-22-37. T.D. 1,195 ft.; W.O.C.
Continental Oil Co. No. 2-B-6 Elliott, C NW SW sec. 6-22-37. Spd. 45 ft.
Continental Oil Co. No. 3-B-6 Elliott, C SE SE sec. 6-22-37. Cellar and pits.
Continental Oil Co. No. 1-B-10 Britt, SW sec. 10-20-37. Drlg. 3,395 ft.
Continental Oil Co. No. 6-A-30 Lockhart, NW sec. 30-21-36. T.D. 3,940 ft.; testing after acid.
Continental Oil Co. No. 3-B-31 Lockhart, SE sec. 31-21-36. Drlg. 1,690 ft.
Continental Oil Co. No. 6 Lockhart, NE SE NW sec. 30-21-36. T.D. 294 ft.; set 10¾-in. csg. at 286 ft.
Continental Oil Co. No. 1-A Jack, C SW SW sec. 21-24-37. R.U.R.
Continental Oil Co. No. 1-B-24 Reed, C SE SW sec. 24-20-36. T.D. 1,170 ft.; running casing.
Continental Oil Co. No. 2-B-24 Reed, SW sec. 24-20-36. Cellar and pits.
Continental Oil Co. No. 4-A-14 Sanderson, C NE SE sec. 14-20-36. Drlg. 1,800 ft.
Continental Oil Co. No. 5-A-14 Sanderson, NE NE NW sec. 14-20-36. Drlg. 993 ft.
Continental Oil Co. No. 6-A-14 Sanderson, SE sec. 14-20-36. Loc.
Continental Oil Co. No. 1-A-7 State, SE sec. 7-19-37. Cellar and pits.
Continental Oil Co. No. 3-A-26 State, C SW NE sec. 26-19-36. T.D. 4,024 ft.; testing.
Continental Oil Co. No. 1-A-30 Warren, C SE NW sec. 30-20-38. T.D. 3,860 ft.; shot; F. 52 B.O.P.D.; testing.
Crandall, Osmond & Maxwell et al No. 1 Maxwell Permit, C SE SE sec. 2-11-36. Drlg. 4,070 ft.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft.; S.D.O.
Culbertson & Irwin No. 2-A Humphrey, NE NE NW sec. 3-25-37. T.D. 3,452 ft.; S.D.O.
Culbertson & Irwin No. 3-A Humphrey, NE SW NE sec. 3-25-37. Drlg. 3,030 ft.
Eastland Oil Co. No. 1 Waldrop, C SE SE sec. 1-20-38. Drlg. 51 ft.
Emperor Oil Co. No. 1 Johns, C SW NW sec. 24-17-32. Drlg. 3,990 ft.
Empire Oil & Ref. Co. No. 1-G State, sec. 2-21-36. T.D. 3,900 ft.; shut down.
Empire Oil & Ref. Co. No. 2-B State, C SE SW sec. 2-21-37. Drlg. 3,850 ft.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37. Drlg. 3,665 ft.
Great Western Prod. Co. No. 1 State, C SE SE sec. 16-26-37. Drlg. 2,930 ft.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; testing.
Gulf Oil Corp. No. 2 Cole, C NE NE sec. 16-22-37. T.D. 1,141 ft.; shut down.
Gulf Oil Corp. No. 1 Elliott, SW SE SE sec. 15-25-37. Drlg. 3,380 ft.
Gulf Oil Corp. No. 1-E Janda-State, NE NW NE sec. 21-23-36. Loc.
Gulf Oil Corp No. 3-C Kutter, NW sec. 18-19-37. T.D. 3,908 ft.; testing.
Gulf Oil Corp. No. 1-B Stebbins, NE sec. 5-22-37. Drk.
Gulf Oil Corp. No. 1 Telton, C SE SE sec. 28-21-36. Drlg. 3,500 ft.
Gulf Oil Corp. No. 1-B Shipp, C NW SW sec. 8-19-37. Drlg. 2,718 ft.
Gulf Oil Corp. No. 1-B White, SE sec. 35-20-36. Drk.
Herschback Oil Co. No. 1 Alexander, C NE SW sec. 5-21-37. Drlg. 900 ft.
Humble O. & R. Co. No. 2 Fopeano, C SE NE sec. 35-20-36. T.D. 1,280 ft.; W.O.C.
Humble O. & R. Co. No. 3 Williams, C SW NW sec. 34-24-37. Drlg. 2,710 ft.
Humble O. & R. Co. No. 1 Fopeano, C SE SW sec. 25-20-36. Drlg. 3,185 ft.
Humble O. & R. Co. No. 2 Saunders, C NW NW sec. 9-22-34. Drlg. 3,711 ft.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; testing.
Landreth Prod. Co. No. 1 Grizzell, NE sec. 8-22-37. T.D. 3,475 ft.; W.O.C.
Landreth Prod. Co. No. 2 Grizzell, C SW NE sec. 8-22-37. Cellar and pits.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. T.D. 4,593 ft.; F. 51 B.O. in 1 hour, naturally.
Magnolia Pet. Co. No. 3 State-Bridges, C SW SE sec. 23-17-34. T.D. 225 ft.; running csg.
J. A. Mascho No. 1 Cloyd, C SE SE sec. 20-22-33. Wildcat Drlg. 1,650 ft.
McDonald & Weiner No. 1 Elliott, SE cor. sec. 19-21-37. Drlg. 3,675 ft.
C. T. McLaughlin No. 1 Polhamus, NE sec. 9-24-37. Drlg. 90 ft.
Mid-Continent Pet. Corp. No. 2 Boren, C SE NE sec. 20-22-36. Drlg. 3,109 ft.
Murray et al No. 4 State Wallace, NW SW NW sec. 3-21-36. T.D. 3,840 ft.; flowing 40 B.O.P.D. while C.O.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat; drlg. 3,653 ft.
Ohio Oil Co. No. 2 Grizzell, C NW SE sec. 5-22-37. T.D. 3,600 ft.; prep. to drill in.
Ohio Oil Co. No. 1 Hardy, NE NE SE sec. 20-21-37. Drlg. 1,435 ft.
Ohio Oil Co. No. 1 Kutter D, C SW SW sec. 8-19-37. Drlg. 3,535 ft.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; cleaning out.
Lem Peters No. 1 Graham, sec. 27-22-37. Drlg. 20 ft.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-25-37. Loc.
Plains Prod. Co. No. 1 Stuart, NE SW SW sec. 10-25-37. T.D. 2,955 ft.; S.D. repairs.
Repollo Oil Co. No. 1 Carter, SW SE NE sec. 8-24-37. T.D. 3,787 ft.; plugging back.
Repollo Oil Co. No. 1 Cowden, NE cor. sec. 31-23-37. T.D. 3,483 ft.; D.S.T., no oil.
Repollo Oil Co. No. 3 Jamison, SW NE NE sec. 21-24-37. T.D. 3,669 ft.; F. 125 B.O.P.D.
Repollo Oil Co. No. 3 Moseley, SW sec. 34-24-37. Drk.
Repollo Oil Co. No. 4 Roach, NW NW SW sec. 21-20-37. T.D. 3,875 ft.; P.B. 3,872 ft.; F. 40 B.O. in one head.
Repollo Oil Co. No. 1 Turner, sec. 29-21-37. Drlg. 660 ft.
Repollo Oil Co. No. 1 White, SE NE SE sec. 35-20-36. T.D. 3,860 ft.; acidized; F. 572 B.O. in 14 hrs.
Republic Prod. Co. No. 1 Davis, SW cor. sec. 34-23-36. T.D. 1,422 ft.; W.O.C.
Rowan Drlg. Co. No. 1 Elliott B, C NE NW sec. 9-22-37. T.D. 3,747 ft.; testing.
Rowan Drlg. Co. No. 2 Elliott B, C NW NW sec. 9-22-37. T.D. 1,177 ft.; W.O.S.T.
Rushwold Oil Co. No. 1 Mattix, NE sec. 10-24-37. Cellar and pits.
Samedan Oil Co. No. 3 Hughes, sec. 4-23-27. T.D. 3,631 ft.
Samedan Oil Co. No. 4 Hughes, C NW SE sec. 10-23-37. Drlg. 865 ft.
Schermerhorn Oil Co. No. 2 Woolworth, sec. 29-24-37. T.D. 3,577 ft.; P.B. 3,557 ft.; testing.
Shell Pet. Corp. No. 3 Black, SE SE SW sec. 21-24-37. T.D. 3,116 ft.; running tubing.
Shell Pet. Corp. and Devonian Oil Co. No. 3 Christmas, C SW NE sec. 21-22-36. Drlg. 3,556 ft.
Shell Pet. Corp. No. 2 Rinewalt, NW sec. 4-22-37. Derrick.
Shell Pet. Corp. No. 4-E State, C SW NW sec. 12-20-36. Drlg. 3,777 ft.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. T.D. 3,620 ft.; testing.
Skelly Oil Co. No. 1 Combest, NW NW SE sec. 27-23-36. Drlg. 2,575 ft.
Skelly Oil Co. No. 1 E. T. Johns, SW sec. 21-24-37. Cellar, pits.
Skelly Oil Co. No. 2 Mon-State, C NE SE sec. 13-19-36. T.D. 304 ft.; W.O.C.
Skelly Oil Co. No. 3 E. Sims, C SE SE sec. 2-23-37. T.D. 3,675 ft.; C.O.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,642 ft.; cleaning out.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,622 feet.
Skelly Oil Co. No. 6 R. R. Sims, C SW SW sec. 3-23-37. T.D. 3,630 ft.; F. 100 B.O.P.H. by heads.
Skelly Oil Co. No. 1-E W. P. Sims, C NW NE sec. 10-23-37. T.D. 3,625 ft.; flow. 452 bbls. in 24 hours



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Almost without exception operators agree that the McKissick Improved Tubing Catchers outperform all others. No "jams" or lost time with stuck tools. Here is a tubing catcher that functions automatically under all ordinary conditions. It allows ample clearance of both head and slips and has ample fluid courses. The slips of the McKissick Tubing Catcher are sufficiently large to distribute the shock load over a larger area of casing surface, and the slip rest acts as a fluid protector as well as a guide. Each tubing catcher is marked for specific weight and sizes of casing in which it is intended to be used.

THE ANCHOR ATTACHMENT

When the anchor attachment is run in conjunction with the new McKissick Tubing Catcher, the tubing may be anchored at any point simply by rotating the tubing catcher one-half turn to the left and released by the reverse motion. Only one part, freely fitted, functions to set the anchor by means of the lifting sleeve which raises the slips to the head; therefore, making a gripping contact to the casing, assuring a positive shift-proof anchor.

For speed and safety in all tubing operations use the new McKissick Tubing Catcher and Positive Anchor Attachment—a dependable combination.

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Philadelphia, Pa.

Skelly Oil Co. No. 2 W. P. Sims, C SE NE sec. 10-23-37. T.D. 123 ft.; W.O.C.
Skelly Oil Co. No. 1 State H, C E half SW NW sec. 25-20-36. Drlg. 2,995 ft.
Skelly Oil Co. No. 2 State H, C E half NW NW sec. 25-20-36. Drlg. 3,050 ft.
Skelly Oil Co. No. 2 Sticher, C NW SW sec. 4-22-37. Drlg. 3,385 ft.
Stanolind O. & G. Co. No. 10-A Gilluly, SE SE NE sec. 24-20-36. T.D. 310 ft.; W.O.C.
Stanolind O. & G. Co. No. 11-A Gilluly, C SW NE sec. 24-20-36. Drlg. 1,200 ft.
Stanolind O. & G. Co. No. 12 Gilluly A, C NW NW sec. 24-20-36. Drlg. 2,895 ft.
Stanolind O. & G. Co. No. 1-B O. J. Gilluly, C NW SW sec. 25-20-36. Drlg. 3,355 ft.
Stanolind O. & G. Co. No. 2-A Langlie, C NW SW sec. 9-25-37. T.D. 3,214 ft.; S.D. repairs.
Stanolind O. & G. Co. No. 1-A Hill, C NW SE sec. 6-21-37. Location.
Stanolind O. & G. Co. No. 1-B Hill, NE sec. 6-21-37. Drlg. 1,770 ft.
Stanolind O. & G. Co. No. 2-B Langlie, C NW NW sec. 15-25-37. T.D. 3,458 ft.; P.B. 3,147 ft.; shut in.
Stanolind O. & G. Co. No. 2-A Myers, C SW SW sec. 15-24-37. Derrick.
Stanolind O. & G. Co. No. 3-A Myers, C SW SE sec. 22-24-37. Drlg. 2,192 ft.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 2-21-36. Drlg. 3,806 ft.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 16-24-37. T.D. 3,540 ft.; to shoot.
Stanolind O. & G. Co. No. 1 Thompson, NE sec. 6-21-27. Location.
W. H. Street No. 2 Wood, C SW NE sec. 22-22-37. T.D. 3,692 ft.; fishing.
Sun Oil Co. No. 6 Akens, C NE SE sec. 3-21-36. Drlg. 3,127 ft.
Texas Co. No. 2 Fristoe, NW NE NE sec. 3-25-37. Rigging up machine.
Texas Co. No. 2-B State, SE sec. 16-23-36. Location.
Texas Co. No. 6-C State, NE sec. 19-20-37. Moving in.
Texas Co. No. 11-L State, C SW NE sec. 1-18-34. T.D. 4,200 ft.; R.U.S.T.
Texas Co. No. 2 Falvy, C NW NW sec. 8-22-37. T.D. 223 ft.; W.O.C.
Texas Pacific C. & O. Co. No. 6-A State, Acct. 2, NE sec. 7-22-36. Drlg. 3,565 ft.
Two State Oil Co. No. 1 Atha, C SW SW sec. 31-21-36. T.D. 3,872 ft.; testing.
Two States Oil Co. No. 1 Morris, SW SE SE sec. 21-18-38. Derrick.
Williams & Cockburn No. 3 Miller, C SW SW sec. 23-17-32. T.D. 3,880 ft.; to shoot.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-27. T.D. 55 ft.; shut down.
Barnett Oil Dev. Co. No. 1 King Permit, C NW SE sec. 23-26-30. Rigged up and shut down.
Fred Brainerd No. 2 Brainerd, sec. 5-18-27. T.D. 1,818 ft.; running tubing.
Ed Bryant No. 1 Stebbins, C NE SW sec. 19-20-29. Drlg. 960 ft.
Carper Drlg. Co. No. 2 Gissler, SW SE NW sec. 23-17-30. Drlg. 3,255 ft.
Cities Service Oil Co. No. 1 State, CSL SW SE sec. 16-17-30. T.D. 3,275 ft.; cleaning out.
Continental Oil Co. No. 1 Etz, C NW NE sec. 24-16-30. T.D. 3,745 ft.; P.B. 3,728 ft.; W.O.C.
Danciger O. & R. Co. No. 3 Turner, SW NE SW sec. 18-17-31. Drlg. 1,978 ft.
Emperor Oil Co. No. 3 Puckett, C NE NW sec. 24-17-31. T.D. 3,700 ft.; fishing.
Etz Bros. No. 4 State, C S½ SE SE sec. 16-17-30. T.D. 480 ft.; W.O.C.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; T.D. 2,020 ft.; testing water shut-off.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,800 ft.
Franklin Pet. Corp. No. 1 McIntyre, NE NW SW sec. 20-17-30. Rigged up and shut down.
C. J. Frederick No. 1 Reed, C NE SW sec. 28-24-28. Drlg. 375 ft.
F. W. & Y. Oil Co. No. 6-A Gissler, NE sec. 23-17-30. Drlg. 2,589 ft.
F. W. & Y. Oil Co. No. 7-A Gissler, NE sec. 23-17-30. Drlg. 2,735 ft.
F. W. & Y. Oil Co. No. 1-B Gissler, SW sec. 14-17-30. Loc.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft.; fishing.
Grayburg Oil Co. No. 8 Burch, SE SE NW sec. 19-17-30. Drlg. 2,965 ft.
Grayburg Oil Co. No. 9 Burch, SW NE NE sec. 19-17-30. Drlg. 2,027 ft.
Grayburg Oil Co. No. 4 Keely, SE sec. 24-17-29. Location.
M. A. Grisham No. 1 Chaytor, NE sec. 14-24-26. Moving in machine.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. T.D. 455 ft.; W.O.C.
Woodworth Hawkins No. 1 Mack, C SW SW sec. 20-24-27. T.D. 380 ft.; S.D. for repairs.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 1,140 ft.; S.D.
Nash-Windfohr & Brown No. 4-A Jackson, NE sec. 13-17-30. T.D. 3,451 ft.; cleaning out.
Nash-Windfohr & Brown No. 5-A Jackson, NE sec. 13-17-30. Drlg. 2,785 ft.
Nash-Windfohr & Brown No. 4-A Stevens, C SW SW sec. 13-17-30. Drlg. 3,345 ft.
Nash-Windfohr & Brown No. 2-B Stevens, NW sec. 13-17-30. Rig.
Nash-Windfohr & Brown No. 6-A Jackson, SE sec. 13-17-30. Drlg. 2,155 ft.
Nash-Windfohr & Brown No. 7-A Jackson, SE sec. 13-17-30. Drlg. 2,450 ft.
W. A. Nichols No. 1 Johnson, NE sec. 35-16-21. Wildcat; T.D. 3,697 ft.; P. 20 B.O.P.D.
Premier Pet. Corp. No. 1-E Parke, sec. 22-17-30. T.D. 3,423 ft.; F. 170 B.O. in 12 hrs.
Repollo Oil Co. No. 2-D McIntyre, NW NE SW sec. 20-17-30. T.D. 3,280 ft.; acidized; F. 37 B.O. in 24 hrs.
Paul Sargent No. 1 State, NE sec. 16-17-31. T.D. 3,749 ft.; P.B. 3,745 ft.; testing.
R. A. Shugart No. 1 Coulthard, C NW SW sec. 35-18-31. Drlg. 3,380 ft.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. T.D. 1,492 ft.; running casing.
Weiner & McDowell No. 1 Kerr, C SE NW sec. 3-24-29. Drlg. 2,252 ft.
W. K. Royalty Co. No. 1 State, C SW NE sec. 16-17-31 T.D. 3,378 ft.; S. 62 B.O. in 8 hrs.
Western Gas Co. No. 1 Cagle, C NW NW sec. 8-26-30. Drlg. 2,100 ft.

Chaves County

English & Harmon No. 11 Billingslea, SE sec. 9-15-29. T.D. 3,545 ft.; P.B. 3,427 ft.; S.D.
E. J. Fisher No. 1 Etz Permit, NE sec. 23-7s-26. R.U. machine.

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INSURANCE MANAGERS

HOUSTON

Mathieson et al No. 1 Cole, C NE NW sec. 19-15-27. Drlg. 796 ft.

Curry County

Bond & Harrison No. 1 Hart ranch, C NW SE sec. 13-2n-31. T.D. 3,045 ft.; S.D.

Dona Ana County

Juels C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Government, NE sec. 14-14-10w. T.D. 1,390 ft.; fsg.

Otero County

George Mulvey No. 1 State, SW cor. sec. 11-25-8. T.D 263 ft.; S.D.
Fred Turner No. 1 Evans, NW NW SW sec. 22-14-12. O.W.D.D.; wildcat; T.D. 3,763 ft.; S.D.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. Drlg. 360 ft.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. S.D. 3,750 ft. for csg.

McKinley County

Guarantee Oil Co. No. 1 fee, NW NW NW sec. 31-20n-9w. Drlg. 300 ft.
S. Dysart et al No. 1 Bouton, CEL NW NE sec. 14-14n-10w. T.D. 1,390 ft.; re-ran 12½-in. to 1,320 ft. and S.D.

San Juan County

The Continental Oil Co. No. 64 Rattlesnake, C W half NW section 2-29n-19w, Rattlesnake field, was completed in the Dakota at 843 feet for 43 bbls. per day.

Continental Oil Co. No. 65 Rattlesnake, NE NW SE sec 2-29n-19w. Loc.; (first report).
Jack Amenda No. 4 Hart, NW NE SW sec. 25-30n-12w. S.D. 2,048 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE sec. 33-30n-11w. Drlg. 730 ft.

Socorro County

Central New Mexico Oil Co. No. 1 Brown, SE NW sec. 16-3n-1e. Drlg. 1,250 ft.

Valencia County

C. A. Brober et al No. 1 Fuqua, NE NE sec. 19-5n-3e. S.D. 900 ft.; to chge. to rotary.
Big Three Oil Co. No. 1 Dalles Townsite, SE SE NW sec. 5-6n-1e. T.D. 6,001 ft.; set whipstock at 5,640 ft.; drlg. by D.P.

COLORADO

The Midwest Drilling & Development Co. No. 1 Callahan, a deep test in the DeBeque district, topped a 60-foot sand at 2,118 feet from which oil rose several hundred feet in the hole. It will run a 6⅝-inch liner before going into the Dakota. The hole has gone through 16 water sands which were cased off before getting the oil show.

Midwest Drlg. & Dev. Co. No. 1 Callahan, NE NW SE sec. 30-8s-97w. Drlg. 2,565 ft.
Continental Oil Co. et al No. 1 Miller, SW SW NW sec. 36-8s-91w. T.D. 600 ft.; rmg. to set surf. pipe.

Moffat County

Morapas Pet. Co. No. 1 Coles, SW SW SE sec. 1-3n-92w. Drlg. 2,515 ft.; good O.S. 2,468-78 ft.; S.G. 2,478 ft. in hd. tight sd.
Anderson-Kerr Drlg. Co. et al No. 1 Denise, C SE SE sec. 19-9n-99w. Drlg. white sd. 2,643 ft.; 10-in. set at 2,508 ft.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NW sec. 31-36n-17w. T.D. 3,830 ft.; rmg. at 3,790 ft. to set 4½-in. on bttm.; making about 3 B.P.D. 45 grav. oil; 830 ft. in Penn.

Morgan County

Swisher et al No. 1 Lunt, SE cor. sec. 3-4n-60w. T.D. 1,718 ft.; fsg. two strings tools and bailer.

Park County

South Park Oil Co. No. 1 State, SE SE SW sec. 16-11s-75w. S.D. 5,705 ft.; for winter.
South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75w. Drlg. 5,214 ft.

Pitkin County

Glenco Dev. Co. No. 1 Govt., NW cor. sec. 9-10s-89w. T.D. 1,040 ft.; cleaned up fsg. job; rerng. 10-in.; company has taken over drlg. contract.

Rio Blanco County

Buford Oil Co. No. 1 Govt., C SW SW sec. 16-1n-91w. Drlg. 1,940 ft.
Texas Co. and California Co. No. 1 Unit, SW SE NW sec. 35-3n-94w. T.D. 6,137 ft.; rmg.

WYOMING

Albany County

The Murphy Oil Co. completed an average well in its No. 9 Holst, NW SE NE section 13-17n-77w, which made 153 bbls. in eight hours from the Dakota at a total depth of 3,490 feet. This is an outside well on the north side of the Quealy dome, two locations north of No. 6 Holst. While it proves up a little additional ground, it was considered in proven territory.

Wyco Oil Co., Inc., No. 2-X Chappel, NE NE NW sec. 33-21n-76w. M.I.R.
Ohio Oil Co. No. 2 Griffin, SW SE SW sec. 2-21n-77w. M.I.M.
Murphy Oil Co. No. 10 Holst, SE SE NE sec. 13-17n-77w. Drlg. 3,173 ft.
Wyco Oil Co., Inc., No. 1 Chappel, C NE NW sec. 33-21n-76w. T.D. 765 ft.; swbg.; incr. in gas.
Murphy Oil Co. No. 2 Holst-Woolf, NE NW NW sec. 19 17n-76w. T.D. 135 ft.; drlg. plug.

Big Horn County

The Ohio Oil Co. No. 1 Pryde, C SW SE section 24-56n-97w, Byron dome, an edge well, which swabbed 195 bbls. of fluid, of which 14 per cent was water, at 5,760 feet after plugging back from 6,060 feet, failed to respond favorably after treating with 14,000 gallons of acid and will be deepened again into the Tensleep for another test.

Ohio Oil Co. No. 3 Sidon Canal, NW SW (Lot 40), sec. 24-56n-97w. Loc.; W.O. rig.
Joan Oil Co. No. 1 Howell, sec. 32-55n-97w (Lot 63). S.D. 1,150 ft.
Peay Oil Co. No. 1 Denio, Tr. 43-C, sec. 15-55n-97w. S.D. 3,930 ft.

Campbell County

Powder River O. & G. Co. No. 1 Rhodes, NE SE NW sec. 24-49n-79w. Cmtd. 12½-in. at 650 ft.

Carbon County

The Superior Oil Co. is moving in rotary rig for a Tertiary test on the South Baggs structure, 2 miles north of the Colorado line and 5 miles southwest of the Baggs Oil Co. gas well on the Baggs structure. Location is in the NW NW NW section 7-12n-92w, on the A. Lee Christensen permit. Contract has been let to the Anderson-Kerr Drilling Co. and rig is being moved from Shell Creek. Location offsets the S. Marvin James permit on section 6 and the C. E. Bivens permit in section 12 on the west. The geology is by E. W. Krampert, who estimates the closure at 400 feet, or four times that of Powder Wash to the southwest. Test starts at the top of the Wasatch in the same beds the Powder Wash wells begin. Estimated thickness of Wasatch is 5,000 feet, to which depth the test will be carried. The structure trends east and west on the Cherokee Ridge fold and is approximately 6½ miles long and 2½ miles wide. Deal for the block was closed last May and was turned to the Superior company by S. Marvin James, of Denver, and associates.

Superior Oil Co. No. 1 Christensen, NW NW NW sec. 7-12n-92w. M.I. rotary; (first report).
Ohio Oil Co. No. 2 Union Pacific, SW SW SE sec. 20-21n-80w. Bldg. rig.
Ohio Oil Co. No. 1 Brimmer, C NW NE sec. 32-27n-89w R.U.R.
Ohio Oil Co.-California Co. No. 4-B Kyle, C SW SW sec. 24-21n-79w. W.O. rig.
Ohio Oil Co.-California Co. No. 6 Union Pacific-Cronberg, C SW SE sec. 23-21n-79w. W.O. rig.
Ohio Oil Co. No. 12 H.&C., SE SW sec. 35-20n-78w. Drlg. 3,210 ft. in sat. Sundance sd. topped at 3,170 ft. where 7-in cmtd.
Sinclair-Wyoming Oil Co. No. 11 Wertz, SE NW NW sec. 7-26n-89w. Drlg. 5,840 ft. in Embar.
Producers Oil Co. No. 1, CNL sec. 14-20s-88w. Drlg. 194 ft.
Ohio Oil Co.-California Co. No. 5 Cronberg-U.P., C NW NW sec. 25-21-79w. T.D. 5,643 ft.; cmtd. 7-in. at 5,557 ft.; prep. to shoot tight sd.
Ohio Oil Co.-California Co. No. 3-A Kyle, C SW NE sec. 26-21n-79w. T.D. 5,696 ft.; cmtd. 7-in. at 5,626 ft.; tstd. 5 B.P.H.; may P.B. and shoot.
Medicine Bow Oil Co. No. 1 Hintze-Govt., C NE SE sec. 18-22n-78w. S.D. 2,347 ft.

Niobrara County

The Continental Oil Co. No. 10 Tom Bell Cattle, C SW NW section 34-36n-65w, Lance Creek field, was listed as a completion in the Minnelusa sand of Pennsylvanian age at 5,299-5,301 feet after plugging back from 6,256 feet. In the last test it flowed 163 bbls. of oil and 90,000 feet of gas in 24 hours through a three-sixteenths inch choke. It was showing some increase at the conclusion of the test. It is located a mile west and half a mile north of the Ohio Oil Co. No. 5 Leo, the discovery well in the Minnelusa, and about 2 miles to the northeast of the center of the Sundance pool. It had water in the basal Sundance at 4,013-43 feet and it was made into a deep test. It topped the red beds at 4,045 feet and the Minnelusa formation at 4,685 feet. There was a water sand at 4,685-4,700 feet and at 5,167-77 feet it picked up a marker bed. The top of the Madison was at 5,640 feet and it stopped in pre-Cambrian rock at 6,256 feet. Elevation is 4,351 feet.

Continental has made a location on the west side for its No. 6-B Schuricht, an east offset to the Cobb-Holly No. 2 Novick, which came in two weeks ago for 2,400 bbls. a day in the Minnelusa, marking an important extension of that horizon. It is also a northeast offset to MacKinnie No. 2 Thompson which is being carried down to the deeper horizon.

The Ohio Oil Co. No. 2 Taylor, a test to the Minnelusa a mile out from Sundance production on the southeastern flank, is shut down for orders at 6,214 feet. It had no oil or gas shows of importance. It topped the Minnelusa at 5,568 feet and the Madison at 6,187 feet. It had water in a sand at 6,087-6,102 feet.

The Argo Oil Co. No. 4 Ford, on the northeastern edge of the Sundance pay and southwest of the Continental company's No. 10 Tom Bell, topped the Madison at 6,002 feet and stopped at 6,016 feet. It then plugged back to a show in the Minnelusa at 5,414 feet and flowed 2 bbls. per hour from 5,331-64 feet. It had little more than a show in the basal Sundance at 4,042-4,118 feet. It probably will be acidized before completing.

The Rocky Mountain Gas Co., a subsidiary of the Ohio Oil Co., has made application to the Lusk city council for a 50-year franchise to supply the town with gas from its absorption plant in Lance Creek. If granted, it will require 22½ miles of pipe line construction estimated to cost $100,000.

Continental Oil Co. No. 6-B Schuricht, SW SW SE sec. 6-35n-65w. Loc.; (first report).
J. M. Huber Corp. No. 1 H. & M., NE NE NE sec. 8-35n-65w. W.O. rig.
J. M. Huber Corp. No. 1 Joss, NE SE NW sec. 6-35n-65w. T.D. 4,096 ft.; O.W.D.D.; M.I.R.
Ohio Oil Co. No. 9 Putnam, C NE NW sec. 4-35n-65w. Drlg. 3,561 ft.
Lewis Goekel No. 1, NE SE NW sec. 31-35n-62e. Resumed drlg. 1,550 ft.
J. M. Huber Corp. No. 3 Joss, NE NE SW sec. 6-35n-65w. T.D. 1,570 ft.; fsg. D.P.
Continental Oil Co. No. 3 Apex-1, SE SE NE sec. 34-36n-65w. Drlg. anhy. 4,982 ft.
W. A. Maupin et al No. 1 Berggren, NW sec. 23-35n-63w. Spdg.; contr. to R. N. Diehl.
J. M. Huber Corp. No. 1-A Lamb, NE SE SW sec. 27-36n-65w. Drlg. anhy. 5,135 ft.
Continental Oil Co. No. 5-B Schuricht, C SW SW sec. 5-35n-65w. T.D. 5,150 ft.; D.P. stuck; fsg.
Ohio Oil Co. No. 2 Taylor-O.P.C.-32, NW NW SW sec. 3-35n-65w. S.D.O. 6,214½ ft.
Ohio Oil Co. No. 2 Leo-O.P.C., NE NE SE sec. 35-36n-65w. R.U.R.
Ohio Oil Co. No. 1 Leo-O.P.C.-7, NW NW SE sec. 35-36n-65w. S.D.O. 5,641 ft.
Continental Oil Co. No. 1 Leach, SW NE NE sec. 29-36n-64w. Drlg. 5,350 ft.
Argo Oil Co. No. 4 Ford, SW NW SE sec. 33-36n-65w. T.D. 6,016 ft.; P.B. to 5,414 ft.; tstg.
Continental Oil Co. No. 8 Otto Rohlff, SW SW SE sec. 31-36n-65w. T.D. 4,025 ft.; prep. to D.D.
MacKinnie Oil & Dev. Co. No. 2 Thompson, NW NW NE sec. 7-35n-65w. T.D. 4,064 ft.; R.U.R. to deepen.

Platte County

Dividend O. & R. Co., Inc., No. 1, CSL NW SW sec. 17-24n-66. Drlg. 2,415 ft.; C.D.

Sublette County

Texas Co. No. 4-I, SE NW SW sec. 27-27n-113w. M.I.M.; (first report).

MONTANA

Big Horn County

E. L. Dana No. 1 Hardy, SW NW sec. 22-9s-35e. Drlg. 550 ft. with S.O. in sdy. sh.

Carbon County

R. C. Tarrant No. 1-A Heare, CWL NE NW sec. 14-6s-10e. Spdg.
Miracle Oil Co. No. 2, CWL NE SE sec. 3-6s-23e. T.D. 1,568 ft.; rng. 6¼-in. cave string; Dakota dry.
Ohio Oil Co. No. 16 Kirt, C SE SE sec. 4-7s-21e. T.D. 5,900 ft.; D.S.T. showed mud and wtr.; will D.D.
Geo. Muth et al No. 1, CSL SE SE sec. 23-6s-23e. S.D. indef at 1,500 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW sec. 35-9s-23e. S.D. 1,626 ft. for 8¼-in.; top Frontier 1,608 ft.; small S.O.
Shaw-Wa Pet. Co. No. 1 Govt., SW SW NE sec. 35-9s-23e, Elk Basin field. R.U.

Choteau County

Security Pet. Co. No. 1 Johnson, NE sec. 23-26n-3e. S.D. 1,690 ft.; (C.D.).

Cascade County

C. Leonard Smith No. 1-A Smith-Schwingle, NE NE SW sec. 14-22n-2e. T.D. 750 ft.; fsg. tools.

Daniels County

White Tail O. & G. Co. No. 2 Wiley, NW NW NW sec. 10-36n-50e. Drlg. 1,498 ft.

Fallon County

Johnson-Burke No. 1 Govt., SE NE SE sec. 6-8n-79e. Drlg. 1,200 ft.

Fergus County

Lewistown Oil Co. No. 1 Parks, C NE NE sec. 13-15n-18e. S.D. 350 ft.
Sam Phillips No. 1 Brakke, NW SE SW sec. 14-15n-19e. Spdg.
White Top O. & G. Co. No. 1 Govt., C NE SW sec. 35-14n-19e. Drlg. 810 ft.

Glacier County

There was only one completion and no new operations in Cut Bank. The Glacier Production Co. No. 1 Bickett Unit, 2,640 feet from east line and 2,480 feet from south line, section 14-34n-5w, was completed at 2,620 feet for 750,000 feet of gas. The Sunburst was dry at 2,550-58 feet. The Cut Bank was at 2,595-2,607 feet.

The action of the Transit & Storage Co. announcing that it will buy no oil from its Cut Bank connections during October left some of the operators without a market. With some wells shut in, others producing at capacity and with four firms posting different prices, there is a threat of a break in the price structure unless some agreement is reached. Operators and purchasers are carrying on negotiations in attempts to stabilize production and prices.

A. B. Cobb No. 1 State, C NE NE sec. 30-37n-4w. Cmtd. 10¾-in. 471 ft.; W.O.C.
Texas Co. No. 8 Tribal-122, CEL SW SE sec. 6-32n-5w. Drlg. 1,790 ft.; Colo. 545 ft.
B. V. Hole No. 3 All.-124, SE SW SE sec. 1-32n-6w. Drlg. 1,690 ft.
Glacier Prod. Co. No. 1 Forbes Unit, C SE NW sec. 4-34n-5w. T.D. 2,620 ft.; rng. 7-in.

Glacier Prod. Co. No. 3 Coburn, NE NE NW sec. 8-33n-5w. Drlg. 1,965 ft.
Lawler-Hoer No. 2 Downen, SW SE SW sec. 9-33n-5w. Drlg. in at 2,907 ft.; est. 2,500,000 to 3,000,000 ft. gas; spraying oil.
R. C. Tarrant No. 6 Long-Miller, C SW NW sec. 24-34n-6w. T.D. 2,840 ft.; rng. 7-in.
Drumheller Oil Trust No. 1 fee, C NE SW sec. 17-34n-6w. T.D. 3,015 ft.; fsg. bailer.
A. R. Pardee No. 1 Anderson, C SE SW sec. 31-32n-5w. S.D. 2,900 ft.

Hill County

Nadeau Brothers No. 1 O'Neal, NW cor. section 34-32n-17e, O'Neal district, was abandoned at 1,300 feet. It is reported that this ends that firm's attempt to develop a shallow gas supply for Havre.

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e. Drlg. 1,750 ft.

Lewis and Clark County

Lewis & Clark Oil Synd. No. 1 Lewis & Clark, NW NW SW sec. 11-18n-5w. Loc.; to go to 1,900 ft.
Lewis & Clark Oil Synd. No. 1 Pathfinder, CNL NW SE sec. 29-18n-4w. Loc.
Lewis & Clark Oil Synd. No. 1 Sacajawea, SE NE NE sec. 5-17n-4w. Loc.; prob. not drill this year.

Park County

Ben W. Ryan et al No. 1 Burgess, SE SW NW sec. 28-2s-11e. Drlg. 1,200 ft.

Roosevelt County

John W. Schmidt et al No. 1 Freu, NW NW NE sec. 21-28n-50w. Drlg. 700 ft.

Toole County

There were three completions and three new operations in the Kevin-Sunburst area. One of the completions was an important wildcat which points to the opening of a new pool 2 miles to the west of the nearest production and possibly marking an extension of the Cut Bank area to the northeast. This well is Pfabe & Engleking No. 1 Ennerberg, NW SE SE section 26-35n-4w. It is about midway between Kevin-Sunburst and the Cut Bank gas field. It had 300,000 feet of gas in the Sunburst at 1,710-45 feet and continued on down to the Madison contact at 2,060 feet. It stopped drilling at 2,063 feet. After acidizing with 500 gallons it flowed 100 bbls. of 38.4-gravity oil through the casinghead with a little water in 24 hours. The oil has a paraffin base and no sulfur.

There are some producing wells in section 29-35n-3w, 3 miles to the east of No. 1 Ennerberg and on the western edge of the Kevin-Sunburst field. Between these wells and the new producer are some dry holes in section 30-35n-3w. The nearest abandoned well is R. C. Tarrant's No. 1 Barkulo, C NW NW section 25-35n-4w, which had water in the contact at 2,019-25 feet. Four to six miles to the west in Townships 35 and 36n-5w, are a number of producing gas wells of the Glacier Production Co. This completion attracts attention to A. B. Cobb's No. 1 State, C NE NE section 30-37n-4w, which is seeking a northeast extension of Cut Bank.

A. E. Crumley No. 11 Fryberger, SE cor. NE section 24-35n-3w, had the contact at 1,605 feet and drilled to 1,670 feet. It plugged back to 1,640 feet, acidized with 500 gallons. It is making 100 bbls. of water and 15 bbls. of oil.

Treasure State Oil Co. No. 5 Shaw, NW SE NE section 35-36n-2w, is making 40 to 50 bbls. per day from the Sunburst sand at 1,551-85 feet, which is also the total depth.

Wm. McKnight No. 3 Gunderson, NE NE NW sec. 19-35n-2w. Drlg. 580 ft.; (first report).
Big West Oil Co. No. 6 McDonald, SW SE SW sec. 19-35n-2w. Drlg. 500 ft.; (first report).
Rice Oil Co. No. 2 Larson, SW NW NW sec. 18-35n-2w. T.D. 350 ft.; rng. 10-in.; (first report).
Plotke & Rader No. 11 Fryberger, NW SE SE sec. 29-35n-3w. T.D. 1,500 ft.; rig burned down.
Fred Munger No. 1 Haggerty, SE NE SE sec. 14-35n-2w. T.D. 1,505 ft.; contact 1,454 ft.; acd. 500 gals.; no results; S.D.O.
Wm. M. Fulton No. 2 Thompson, SW SE NW sec. 28-35n-3w. T.D. 1,565 ft.; acd. 500 gals.; rng. 8¼-in.
Hamilton & Hamilton No. 4 Reeg, SE SW SE sec. 14-35n-2w. S.D. 400 ft.; repairs.
Vander Pas & Montgomery No. 1 Thumm, NW SW NW sec. 33-35n-3w. T.D. 1,710 ft.; contact 1,695 ft.; stdg.
Guy Smith No. 1 Govt., C NE SE sec. 35-36n-3w. Spd. 10 ft. and S.D.
C. T. Olen No. 7 Engemoen, C NW NW sec. 14-35n-2w. T.D. 1,607 ft.; contact 1,591 ft.
C. L. Tomlinson No. 1 Davidson, NW NE SE sec. 28-35n-3w. S.D. 1,500 ft.
E. O. Reickhoff No. 3 Baum, SW SW SE sec. 3-35n-3w. S.D. 110 ft.
California Co. No. 7 Neumann, NW NW NE sec. 23-35n-2w. Drlg. 1,509 ft.
McCurdy No. 1 Hollowell, C SE SW sec. 1-35n-3w. S.D. 1,565 ft.
Bryant Bros. No. 1 Lashbaugh, NE SW NW sec. 34-25n-2w. T.D. 850 ft.; R.U. heavier mach. to resume.

Outside Kevin-Sunburst

Model Oils, Inc., No. 1 Fey, NE SW sec. 5-37-3w. T.D. 2,600 ft.; fsg. tools.
Montana Gas Corp. No. 2 Clark, C SE SW sec. 24-37n-1w. T.D. 1,500 ft.; fsg. tools.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. T.D. 1,210 ft.; rng. 8¼-in. to 1,203 ft. to test gas in Frontier.

Broadview Dome Oil Co. No. 1, NE NE SW sec. 18-3n-23e. Drlg. Sundance 2,950 ft.
Laurel Oil Co. No. 1, C NW SW sec. 7-2s-24e. S.D. 150 ft.

UTAH

Carbon County

Kelly Young No. 1 Patented, NE NE SE section 20-14s-10e, Price district, was plugged and abandoned at 1,080 feet with a hole full of water. It had a good show of gas in the Ferron sand in the Mesa Verde at 580 feet and a show of gas through water at 1,080 feet.

Daggett County

Mountain Fuel Supply Co. No. 1 Smith, C SW NE sec. 20-3n-24e. Drlg. 5,083 ft.; (loc. cor.).

Grand County

The Cane Creek Oil Co. No. 2 Shaffer, on the Cane Creek dome, is shut down temporarily at 400 feet while No. 1 Shaffer, the old well it offsets, is again being killed. After shutting off the old well it broke loose again and it was necessary to erect a derrick to facilitate the work. Part of the rig timbers are in place and waiting for more to be barged down the river from Moab. No. 2 Shaffer had shows of oil and gas in brown shale at 104-06 feet and in sandy shale at 184-90 feet. Oil shows were encountered in brown shale at 217-19 feet and 295-97 feet. Total of above was estimated at 10 bbls. per day. On October 8 another oil and gas show was reported in gray shale and a bailing test indicated about 20 bbls. per day for above horizons. All of the above are heavier oil than encountered in the old well at 2,025 feet.

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. S.D. 6,715 ft.; M.I. heavier rotary equip.
Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. T.D. 2,265 ft.; prep. to resume to go to 3,000 ft.
Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. S.D. 400 ft.

NEBRASKA

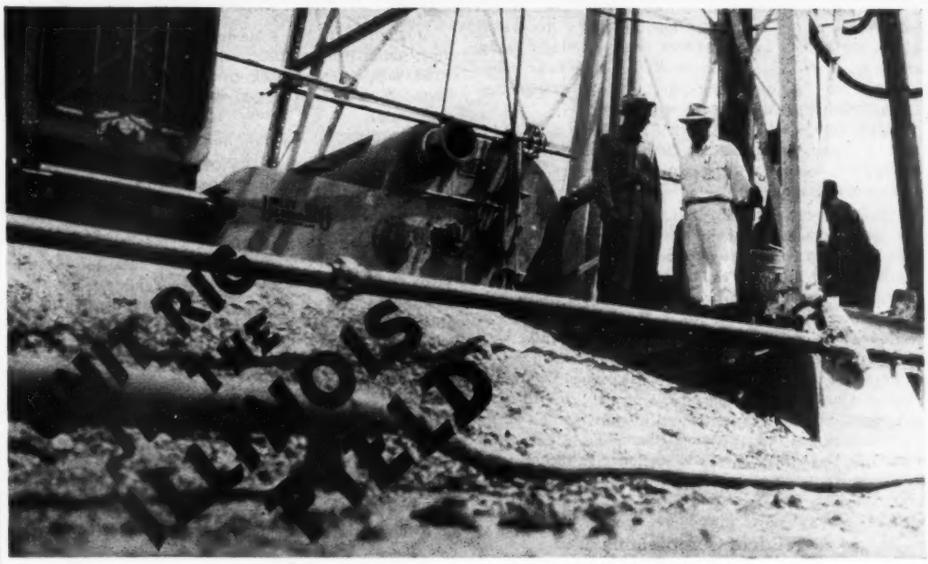
Sioux County

J. M. Huber Corp. and United Producers, Inc., No. 1 Morgan, C SW SW sec. 32-35n-56e. S.D. 3,257 ft., r.b.

NORTH DAKOTA

Williams County

California Co. No. 1 Kamp, C NW NE sec. 3-154n-96w. R.U. after cmtg. surf. pipe.



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By
DAL DALRYMPLE

WATER IN MURRAY OUTPOST; GAS AT PANHANDLE WILDCAT

Failure of one of the more interesting Oklahoma wildcats was indicated the past week when salt water rose in the hole at Sinclair Prairie Oil Co. and others No. 1 Lancaster Trust, C SW NE section 10-1s-2e, Murray County, southeast of Davis and in the Davis-Sulphur graben. Water intruded at 4,404 feet, total depth, after stuck pipe had been freed. It was expected the wildcat would be abandoned.

Two other interesting outposts also were disappointments of the week. Continental Oil Co. No. 1 Ferguson, SW SE NE section 38-8-20, Haskell County, had a showing of gas but was reported scheduled for abandonment at 7,003 feet, total depth, after having drilled in hard formation most of the way.

Ardie Oil Co. No. 1 State, NE NE SE section 16-14-4e, Lincoln County, southeast of Chandler, had a hole full of water in second Wilcox sand at 5,035 feet and was due for abandonment.

Carter Oil Co. and others No. 1 Claytor, C W half NE SW section 27-2n-9, wildcat on the Centrahoma structure in Coal County, was to be deepened from total depth of 6,217 feet in Viola lime, after a showing of oil in that formation had proved disappointing.

Phillips Petroleum Co. No. 1 Becker, NE NW SW section 8-5-10, south of Calvin in Hughes County, was waiting for cement to harden after setting 9-inch casing at 4,415 feet, total depth 4,429 feet. It topped Cromwell sand at 4,398 feet and showed gas on drill-stem test.

A gas discovery was registered in the Guymon area, Texas County, in the Oklahoma Panhandle. Hagey and associates No. 1 Becker, C NE section 4-1n-13ecm, was bottomed at 2,967 feet, with gas volume reported at 8,000,000 feet.

Wildcat Completions

Darby Petroleum Corp. No. 1 McCoy, SE SE SW section 24-23-2w, about 1 mile east of the Billings pool, Noble County, had first Wilcox sand at 4,758 feet, second Wilcox sand 4,833 feet, total depth 4,848 feet, and was abandoned when Schlumberger test showed salt water.

National Refining Co. No. 2 Page, NW SW SE section 28-22-9, Osage County wildcat, topped Wilcox sand at 2,775 feet and was dry and abandoned at 2,850 feet, total depth.

Ace Gutowsky No. 1 Booker, NW cor. section 33-2n-18w, wildcat in Jackson County, topped Granite at 1,031 feet and was dry and abandoned at 1,091 feet, total depth.

Sunray Oil Co. and Olson Oil Co. No. 1 Canning, SW SW NE section 31-17-1w, Logan County wildcat, topped Dolomite at 5,707 feet, Wilcox sand 5,726 feet, and was dry and abandoned at 5,812 feet, total depth.

Pontotoc County

E. H. Moore No. 1-A Brown, NE SE SE section 33-2n-7, Fitts district, Pontotoc County, found Hunton lime at 3,821 feet, Sylvan shale 4,145 feet, was bottomed at 4,150 feet, acidized and flowed 528 bbls. of oil in 1 hour and 45 minutes. Later, it flowed 125 bbls. of oil in 12 hours.

Same operator's No. 9-A Schauers, NE SE NW section 29-2n-7, found Cromwell sand at 2,500 feet, Pennsylvania Caney 2,620 feet, total depth 2,630 feet, perforated casing and flowed 220 bbls. of oil in 24 hours from Cromwell sand, on gas lift.

Crusaders Petroleum, Inc., No. 1-B Morin, SE cor. section 20-2n-7, topped Cromwell sand at 2,650 feet, total depth 2,660 feet, and swabbed 55 bbls. of oil in 24 hours.

Simpson and Crusaders No. 3-B Woolley, NW NE SE section 28-2n-7, flowed 117 bbls. of oil in 24 hours from Cromwell sand topped at 2,424 feet and was completed at 2,550 feet, total depth.

Magnolia Petroleum Co. No. 14 Norris, SE SW SE section 21-2n-7, found Cromwell sand at 2,589 feet, was bottomed at 2,661 feet, and flowed 355 bbls. of oil in 24 hours, completed.

Sinclair Prairie Oil Co. No. 23 Woolley A, SW cor. section 22-2n-7, flowed 60 bbls. of oil in six hours and was completed after plugging back to 2,650 feet from 2,700 feet, total depth. Top of Cromwell sand was 2,581 feet.

J. Paul Getty No. 8 Masters, NE SE NW section 23-2n-7, found Hunton lime at 3,850 feet, was bottomed at 3,981 feet, plugged back to 3,938 feet and was completed for potential of 234 bbls. of oil, cutting 28 per cent water.

In the Jesse sector, Continental Oil Co. No. 2 Brown, NW NW NE section 11-1n-7, was completed for potential of 543 bbls. of oil after plugging back to 4,593 feet from 4,722 feet, total depth. Top of Bromide was 4,412 feet and sand was found at 4,573-86 feet.

Same company's No. 1 Hale, C E half NE NW section 2-1n-7, topped Hunton lime at 4,042 feet, total depth 4,070 feet, was acidized and flowed and swabbed 175 bbls. of oil in 24 hours. It was reacidized, flowed 233 bbls. of oil gross in one hour, and 29 bbls. of oil net the second hour.

Carter Oil Co. and Gulf Oil Corp. No. 1 Thompson, C E half SE NW section 1-1n-7, found Hunton lime at 4,000 feet, Sylvan shale, 4,325 feet, total depth 4,331 feet, was acidized and flowed 145 bbls. of oil net in seven hours.

Richborn Oil Co. No. 1-A Fleming, SW SE SE section 12-5-4, topped Viola lime at 2,515 feet and was abandoned at 2,605 feet, total depth.

Kilbourne No. 2 Factor, SW NW SE section 25-5-7, had Gilcrease sand at 2,313 feet, total depth 2,327 feet, plugged back to 2,324 feet and pumped 300 bbls. of oil and 700 bbls. of water in 24 hours, completed.

New work in Pontotoc County: Mid-Continent Petroleum Corp. No. 10 Statler, NW SE SW section 2-1n-7, cellar and pits; H. L. Blackstock and others No. 7 Daniel, SE SE SW section 21-2-7, building rig; R. W. Simpson and Crusaders Petroleum, Inc., No. 1-B Woolley, NW NW SE section 28-2n-7, rig on ground; E. H. Moore No. 8-A Schauers, NW SE NW section 29-2n-7, cellar and pits; same operator's No. 1-A Muse, SW NE SE section 33-2n-7, cellar and pits; Benedum & Trees Oil Co. No. 2-B Burke, NW cor. section 33-5-5, on old well being deepened, drilling at 2,462 feet.

Seminole County

Amerada Petroleum Corp. and associates No. 5 Parks, NW SE SW section 33-11-5, North Earlsboro pool, Seminole County, swabbed 459 bbls. of oil in 16 hours and was completed at 4,638 feet, total depth. Top of Wilcox sand was 4,625 feet.

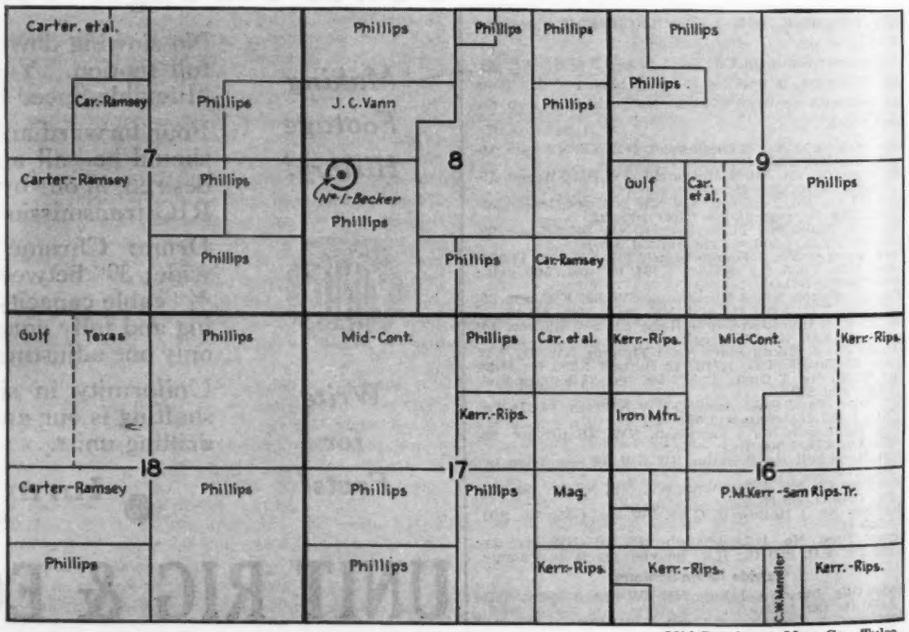
In the Wetley area, N. Phillips and others No. 1-A Isaac, SE SW SW section 13-5-5, found Hunton lime at 2,331 feet, Sylvan shale 2,475 feet, Viola lime 2,600 feet and was completed at 2,678 feet, total depth. After shooting and acidizing, it flowed and pumped 301 bbls. of oil in 24 hours, cutting 8 per cent water.

The following new activity in Seminole County was reported: Amerada Petroleum Corp. and others No. 4 Riddle, SW NW NE section 2-10-5e, building rig; Francis Oil & Gas Co. No. 2 Cravens, SW SE SW section 13-5-5, drilling at 100 feet; Jack Lynch and others No. 2 Burton, NW NE NW section 24-5-5, drilling at 615 feet; W. C. McBride, Inc., No. 1 Collins, NE NW NW section 24-5-5, moving in tools; J. F. Smith No. 1 Norvell, SW SE NE section 32-7-6, cellar and pits; same operator's No. 1 Harryman, NE SW SW section 33-7-6, spudded.

Lincoln County

Deep Rock Oil Corp. No. 2 Eakers, SE SE SW section 35-15-2e, North Wellston pool, Lincoln County, found Dolomite at 5,040 feet, Wilcox sand 5,067 feet, was bottomed at 5,081 feet and flowed 169 bbls. of oil in 24 hours. It was acidized, flowed 327 bbls. of oil in six hours and made potential of 715 bbls.

Wilcox Oil & Gas Co. No. 6 Sac & Fox, SE SE NW



Mid-Continent Map Co., Tulsa

Phillips Petroleum Co. No. 1 Becker, section 8-5-10, Hughes County wildcat, set 9-inch casing at 4,415 feet after getting a show of gas in Cromwell sand

section 15-14-6, was location for a new Lincoln County test.

Hughes County

Pioneer Drilling Co. and Mid-Western Production Co. No. 1-A Bowlegs, C NE SE section 14-9-9, Hughes County, found Wilcox sand at 4,168 feet and was abandoned when water intruded at 4,176 feet, total depth.

Shephard & Thomas No. 1 Ball, NE SW SE section 12-7-8, new test in Hughes County, had rigged up machine.

Estimated Daily Production

Estimated daily average production of Oklahoma for the week ending October 23 and for the preceding week was as follows:

	Barrels	
	Oct. 23	Oct. 16
Allen	5,600	5,225
Billings	7,400	7,100
Burbank	7,900	7,925
South Burbank	13,750	14,100
Balance Osage	20,250	20,500
Blackwell district	5,025	5,050
Bristow-Slick	7,250	7,225
Chandler	2,850	2,825
Crescent	8,400	8,325
Cromwell	3,425	3,450
Cushing-Shamrock	11,100	11,025
Duncan district	3,975	3,950
Edmond	13,100	14,950
Fish	5,575	5,500
Fitts	79,325	79,950
Jesse	3,850	4,025
Graham	4,450	4,425
Gray	1,175	1,275
Healdton	10,150	10,175
Hewitt	4,375	4,275
Holdenville	875	875
Keokuk	8,325	7,350
Konawa	1,625	1,675
Lucien	15,525	14,400
Moore	9,750	10,050
Oklahoma City	141,050	144,750
Olympic	10,800	10,900
Polo	900	900
Sasakwa and townsite	2,475	2,525
Sholem-Alechem	3,025	3,075
Seminole:		
Bowlegs	11,475	11,450
Carr City	5,100	5,000
Earlsboro	5,800	6,125
South Earlsboro	675	700
East Earlsboro	7,400	7,375
Little River	9,350	9,550
East Little River	1,125	1,150
Maud	700	725
Mission	1,950	1,975
Seminole	9,550	9,750
East Seminole	2,100	2,325
Searight	4,100	4,175
Total Seminole	59,325	60,300
St. Louis-Pearson	19,200	19,975
Tatums	6,000	5,925
Tonkawa-Garber-Thomas	4,475	4,500
Wewoka	2,825	2,800
Yale-Jennings	4,200	4,175
Other pools	80,475	79,975
Total Oklahoma	589,775	595,425

Noble County

Two large producers were completed in the Billings pool, Noble County. Continental Oil Co. No. 10 Conway, NW NE NW section 21-23-2w, had Wilcox sand at 4,276 feet, was bottomed at 4,306 feet, flowed 1,161 bbls. of oil in six hours and made potential of 4,875 bbls. Gas volume averaged 3,800,000 feet.

Tide Water Associated Oil Co. No. 2 Folke, NW NW NE section 28-23-2w, flowed 790 bbls. of oil in six hours, making potential of 3,140 bbls. of oil, with 2,230,000 feet of gas. Top of Wilcox sand was 4,343 feet, total depth 4,358 feet.

Logan County

At the south end of the Lucien field in Logan County, Anderson-Prichard Oil Corp. No. 1 Gruninger, NE NW SW section 4-19-2w, was dry and abandoned at 5,317 feet, total depth. It had Wilcox sand at 5,181-5,215 feet.

Payne County

Sun Oil Co. No. 1 Ballinger, NE SE NW section 6-19-5, Payne County, was dry and abandoned at 3,761 feet, total depth. Top of first Wilcox sand was 3,730 feet, second sand 3,753 feet.

Home Gas Co. No. 1 Blanken, NE cor. section 32-19-5, topped Misener sand at 3,654 feet, total depth 3,660 feet, and produced 6,584,000 feet of gas.

Osage County

Peters Petroleum Corp. and Sinclair Prairie Oil Co. No. 19 Osage, NE NE NW section 24-24-7, Osage County, Kasishke area, had sand at 742 feet, total depth 764 feet, and pumped 20 bbls. of oil daily.

E. O. Platter No. 7 Osage, SE SE NE section 13-21-8, was completed as a 5-bbl. pumper at 1,234 feet, total depth. Top of Layton sand was 1,181 feet.

Indian Territory Illuminating Oil Co. No. 449 Osage, NE SE NE section 7-24-9, topped lime at 1,923 feet, total

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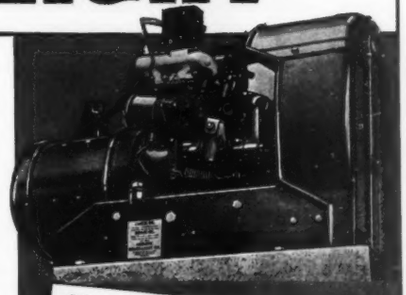

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depth 1,959 feet, plugged back to 1,947 feet and produced 1,900,000 feet of gas.

Link Oil Co. No. 4 Osage, SE NE NW section 9-22-12, was dry and abandoned at 1,885½ feet, total depth.

Ray Branstetter No. 4 Osage, NE SE SW section 23-22-11, was a location. Titus Oil & Investment Co. No. 1 Osage, SE SW SE section 5-25-6, was a location.

Creek County

Sinclair Prairie Oil Co. No. 1 Wallace, SE SE SW section 24-18-9, Creek County, found Wilcox sand at 2,981 feet, total depth 2,992 feet, and flowed 295 bbls. of oil in 24 hours.

L. B. Jackson No. 4 Kelly, NW section 2-17-8, had Red Fork sand at 2,550-77 feet, Bartlesville sand 2,700-31 feet, total depth 2,736 feet, and pumped 9 bbls. of oil and 4 bbls. of water in 24 hours.

Shaw, Doak & Hughes No. 2-A Ingalls, C N half S half SE section 24-17-7, topped Prue sand at 2,456 feet, total depth 2,517 feet, and flowed 2 bbls. of oil daily.

H. D. Daniels No. 1-B Riley, SE SW SW NE section 24-18-10, had sand at 725 feet, total depth 738 feet, and pumped 1½ bbls. of oil daily.

G. D. Taylor No. 1 Veasley, NE NE NW section 36-18-10, had Taneha sand at 2,142 feet, total depth 2,287 feet, plugged back to 2,185 feet and pumped 22 bbls. of oil daily.

Curtis and others No. 1 Wright, SW SE NE section 35-18-9, was dry and abandoned at 3,185 feet, total depth.

Central Commercial Oil Co. No. 1 Hays, NE NW SW section 10-17-10, an old well, was deepened from 2,009 feet to Wilcox sand at 2,954-60 feet, total depth, had a hole full of water and was abandoned. Doak & Hughes No. 1-A Micco, C NE SW section 24-17-7, an old well, was plugged back from 2,530 feet to 2,485 feet, produced 1,500,000 feet of gas and was recompleted.

New work in Creek County: Lease Investment Co. No. 1-A Allen, NE NW NW section 1-14-10, rig; Strozier Drilling Co. No. 3 Atkins, SE NE SW section 12-16-11, spudded; Shaw, Doak & Hughes No. 1 Anthis, NW NE NW section 25-17-7, rigging up machine; Cushing Refining Co. No. 1-A Roberts, NW NW SW section 30-17-9, drilling at 307 feet; L. B. Jackson No. 2 Carman, NW NW SW section 36-18-8, drilling at 300 feet.

Tulsa County

Gilmore Oil Co. No. 1-A Covey, NE SW NW section 13-18-12, Tulsa County, was dry and abandoned in Mississippi lime at 1,540 feet, total depth.

Muskogee County

Robinson Oil Corp. No. 4 Brown, NE section 18-13-16, Muskogee County, had sand at 1,916-1,991 feet, total depth 2,005 feet, and produced 4,000,000 feet of gas.

Armstrong and others No. 21 Morrison, C S half NW SW section 15-14-16, Muskogee County, was drilling at 600 feet.

Okmulgee County

Lease Investment Co. and others No. 1 Harjo, NW NE SW section 4-13-11, Okmulgee County, flowed 97 bbls. of oil in 24 hours and was completed at 3,188 feet, total depth. Production was from Dutcher sand topped at 2,470 feet and Wilcox sand topped at 3,155 feet.

R. C. Vincent and others No. 3 Wheeler, NE NW SE section 6-13-11, was a location. Adams & Riley No. 3 Lee, SW NW SW section 27-15-11, was a location. Link Oil Co. No. 3 Jefferson, NE NW SE section 35-15-13, was a location.

Okfuskee County

Panther Oil Co. No. 4-A Smith, C W half NE NE section 11-11-11, Okfuskee County, had sand at 1,220 feet, total depth 1,235 feet, was shot and pumped 12 bbls. of oil in 24 hours.

Cleveland County

Gulf Oil Corp. No. 2 James, SE NW SW section 27-10-2w, an old well in the Moore pool, Cleveland County, was deepened from 7,281 feet to Wilcox sand at 7,278-89 feet, total depth, and recompleted as a minimum 200-bbl. well.

Stephens County

Gulf Oil Corp. No. 12 Sims, SW NE SW section 12-2s-4w, Stephens County, had sand at 345-70 feet, total depth 1,080 feet, plugged back to 470 feet and pumped 2½ bbls. of oil daily.

Carter & Ring No. 14 Arm, NW NW NE section 26-1s-5w, had lime at 120-80 feet, total depth, acidized with results and was shut down. Fresno Oil Co. No. 2 Simpson, SE SW SW SE section 34-1s-8w, an old well, was rigging up machine to deepen. Walter C. Brainard No. 1-A Cruce, NW SE NW section 10-2s-5w, was estimated good for 10 bbls. of oil at 806 feet, total depth, and was rigging up to pump.

Carter County

Carter Oil Co. No. 40 Tubbee, C N half SW NW section 24-4s-3w, Healdton field, Carter County, had sand at 925 feet, was bottomed at 1,160 feet, and pumped 14 bbls. of oil daily.

Cox-Hamon No. 1 Jackson, SW SE NE SW section 15-4s-2w, an old well, was underreaming 5-inch casing after deepening from 2,252 feet to 2,275 feet.

Various First Reports

In Kay County, E. W. Jones, Inc., and others No. 1 Dorsett, SE SW NW section 25-26-1w, wildcat, was moving in material. Nell Sullivan, trustee, No. 1-A Christenson, NW NW SE section 2-27-3e, was drilling at 895 feet.

In Grant County, Magnolia Petroleum Co. No. 1 Reynolds, NE NE SE section 19-25-5w, wildcat southeast of Pond Creek, was a location.

In Garfield County, Continental Oil Co. No. 1 Barber, NW NW SE section 19-23-3w, an old well, plugged back from 5,283 feet to 4,051 feet, produced 4,600,000 feet of gas from Layton sand at 4,025-35 feet, and was recompleted.

In Pottawatomie County, Magnolia Petroleum Co. No. 3 West, SE SW NE section 26-6-4e, was building rig; same company's No. 2 Green, NE SW NW section 13-7-4, an old dry hole, was rigging up to clean out and test Calvin sand; Denver Producing & Refining Co. No. 1-A Gassaway, SW cor. section 12-7-4, was a rig.

In Jefferson County, Bridwell Oil Co. No. 4 Seay, NW NW NE section 10-7s-5w, was a derrick.

In Comanche County, Ashcraft & Palmer No. 9 School Land, NE cor. section 20-2n-10w, had material on ground.

East Texas Fields

(Continued from Page 139)

30 minutes. The Texas Co. No. 26 Lee, 3,552-56 feet, 27 bbls. in 30 minutes. Danciger Oil & Refining Co. No. 7 McNeely, 3,595-96 feet, 25 bbls. in 35 minutes. General Crude Oil Co. No. 10 Howard, 3,553-59 feet, 56 bbls. per hour. Gulf Oil Corp. No. 14 Reeves, 3,527-39 feet, 20 bbls. in 18 minutes. Hamil & Smith No. 1 Griffin, 3,552-76 feet, 60 bbls. per hour. Johnston & Owens No. 13-B Cole-State, 3,512-16 feet, 42 bbls. in 30 minutes.

Roger Lacey No. 3-A fee, 3,542-56 feet, 65 bbls. per hour. M. W. McVey No. 2 Laird, 3,525-27 feet, 20 bbls. in 30 minutes. Magnolia Petroleum Co. No. 12 Hughey, 3,496-3,511 feet, 72 bbls. per hour. Overton Refining Co. No. 20 I.&G.N. R.R., 3,549-50 feet, 120 bbls. in four hours. Sun Oil Co. No. 54 Cole, 3,510-64 feet, 45 bbls. per hour; No. 14 Smith, 3,608-59 feet, 32 bbls. per hour. M. C. Turnbow No. 9 Culver, 3,493-96 feet, 7 bbls. in 95 minutes.

Rusk County

Atlantic Refining Co. No. 25 Brightwell, 3,586-3,719 feet, 75 bbls. per hour. Houston Oil Co. No. 5-A Brightwell, 3,656-61 feet, 20 bbls. in 20 minutes. Magnolia Petroleum Co. No. 11 Jernigan, 3,668-3,730 feet, 65 bbls. per hour. Meco Production Co. No. 12 fee, 3,720-20½ feet, 20 bbls. in 30 minutes. Dearman Oil Co. No. 10 Arnold, 3,658-66 feet, 68 bbls. in eight hours on pump. Gulf Oil Corp. No. 9-A Keeling, 3,768-78 feet, 40 bbls. per hour through three-quarter inch choke. D. Hanover trustee No. 1 Johnson, 3,812-14 feet, 10 bbls. in 30 minutes. Humble Oil & Refining Co. No. 12 Clackwell, 3,714-15 feet, 72 bbls. per hour. Humble Oil & Refining Co. No. 11 First State Bank, 3,675-76 feet, 96 bbls. per hour; No. 7 Holt, 3,758-67 feet, 95 bbls. per hour; No. 23 Wheelis, junked and abandoned, 3,550 feet.

Hunt Oil Co. No. 4 Turner, 3,679-83 feet, 23 bbls. in 15 minutes. McMurray No. 17-A Blackwell, 3,662-66 feet, 50 bbls. in 30 minutes. Magnolia Petroleum Co. No. 12 Grissom, 3,679½-80½ feet, 20 bbls. in 20 minutes. Ohio Oil Co. No. 23 Price, 3,596-3,626 feet, 9 bbls. in 15 minutes. Small Oil & Producing Co. No. 4 Glover, 3,537-47 feet, 20 bbls. in four hours on pump. Sun Oil Co. No. 9-B Schuler, 3,614-29 feet, 20 bbls. in 44 minutes. Nivia Oil Corp. No. 1 Alford, 3,583-95 feet, 100 bbls. per day swabbing; No. 2 Alford, 3,572-89 feet, 100 bbls. a day on swab.

Upshur County

Humble Oil & Refining Co. No. 38 Smith, 3,592-3,633 feet, 50 bbls. per hour. Petroleum Corp. of Venezuela No. 17 Walker, 3,595-3,636 feet, 40 bbls. in 30 minutes. P. H. Pewitt No. 3 Porter, 3,671-72 feet, 22 bbls. in 45 minutes; No. 13 Williford, 3,638-39 feet, 24 bbls. in 50 minutes. W. L. Pickens No. 5 Webb, 3,633-41 feet, 28 bbls. in 18 minutes. Sun Oil Co. No. 6 Medlin, 3,765-66¼ feet, dry and abandoned. J. E. Watts No. 20 O'Byrne, 3,782-92 feet, 50 bbls. in 60 minutes.

Smith County

Hunt Oil Co. No. 18-B Fair, 3,685-86 feet, 31 bbls. in 45 minutes. E. H. Moore, Inc., No. 5 Smith, 3,778-80 feet, 30 bbls. in 40 minutes. Pointer Oil Co. No. 7 Wright, 3,659-61 feet, 26 bbls. in 30 minutes.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Hunt Oil Co. No. 1 Martin, 5,323-28 feet, 169 bbls. in four hours through one-eighth inch choke. Patton & Phillips No. 2 Focke, 5,347-56 feet, 44 bbls. in 24 hours through three-sixteenths inch choke.

Ellis County

Gigantic Oil & Development Co. No. 1 Sullivan, dry and abandoned 3,742 feet, 4 miles south of Frost.

Franklin County

L. S. Flannery No. 6 Heydrick, 4,220-4,322 feet, 77 bbls. per day on pump.

Freestone County

J. K. Hughes No. 1 Foster, dry and abandoned 3,995 feet, elevation 460 feet. Stanolind Oil & Gas Co. No. 3 Cullinan, 4,000-26 feet, 157 bbls. in 34 hours.

Henderson County

Clark & Cowden No. 6 Wright, 4,057-75 feet, 184 bbls. through one-eighth inch choke. Sanders & Murchison No. 1 Watkins, 4,096-4,107 feet, 102 bbls. through one-eighth inch choke.

Hopkins County

Goldston and others No. 13 Smith, 4,455-4,507 feet, 167 bbls. through one-quarter inch choke. V. Hughes and others No. 1 Hardaway, dry and abandoned, 5,014 feet, 3 miles east of Ridgeway.

Houston County

Ridgeway & Jackson No. 2 Moore, dry and abandoned 4,162 feet, elevation 337 feet, 2 miles southeast of Crockett.

Titus County

G.M.&W. Oil Co. No. 2 Cato, 4,284-4,320 feet, 30 bbls. in six hours on pump. Housh & Thompson No. 3 Blackburn, 4,181-4,300 feet, 463 bbls. on pump. Humble Oil & Refining Co. No. 1 Black and others, dry and abandoned 4,460 feet; No. 7 Fry, 4,232-4,304 feet, 281 bbls. on pump; No. 5 Galt, 4,210-99 feet, 356 bbls. on pump. Lucey Petroleum Co. No. 6 Williams, 4,231-97 feet, 409 bbls. on pump. Tide Water Associated No. 12 Wilson, 4,227-63 feet, 313 bbls. on pump.

Kansas Fields

(Continued from Page 138)

Wolfe, NW SW SE section 14-4s-8w, was rigging up tools.

In Ness County, Oriental Oil Co. No. 2 Tenny, NW SE SE section 19-18-25w, was rigging up rotary; Trojan Oil & Gas Co. No. 1 Moses, C NW NW section 10-18-25w, had spudded. Marshall Drilling Co. No. 1 Anderson, SW SW NW section 23-16-24w, was a location.

In Pawnee County, Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No 1. Jantz, SW cor. section 25-20-16w, was a rig. Mid-Continent Petroleum Corp. No. 1 Smith, NW NW SE section 13-20-16w, was a location.

In Rooks County, Colonial Oil Co. and others No. 1 Tucker, SW SE NW section 23-10-17w, was a rig. Texas Co. No. 1 McCarroll, C W half W half NW section 29-10-17w, was drilling at 1,376 feet.

Eastern Fields

(Continued from Page 128)

at 4,884 feet. At 4,911 feet it struck gas gauging 3,500,000 feet a day, naturally. The well has been shut down to move the boiler back before drilling in. On the Nora Bostic land the same company is preparing to drill out cement at 4,180 feet. Mullins Gas Co. is drilling at 4,924 feet on the Campbell & Odell land. Glenn Oil & Gas Co. is drilling the James A. Haynes test at 5,132 feet. The United Fuel Co. is building rig for No. 4783 on the Nina Chandler land.

In Union district, Mullins Gas Co. is drilling at 4,220 feet on the Sarah Dawley farm.

West and North Texas

By L. E. BREDBERG

SOUTHEASTERN AREAS TAKE PART IN BIG LEASING PLAY

FORT WORTH, Tex., Oct. 25.—Two extreme wildcat tests in the West Texas district were pronounced dry this week and ordered abandoned. At the same time several pool extensions were apparently in the making and new tests were promised the district, which continues as the most active area in the country.

Leasing activities have been switched from the northern tier of counties, in which several discoveries have been made within the past two years, but in which a number of wildcats have been failures. Operators are turning their attention to several counties on the southeastern side of the district, principally Tom Green, Coke, Sterling and Concho counties, where wildcatting has started, one test, Humble Oil & Refining Co. No. 1 Lewis and Wardlaw, in western Tom Green County, seeking production in the Ordovician.

These southerly counties have received scant attention in the past eight or nine years as more western, northwestern and northern counties in the district held the attention of all operators but blocks are being taken in the southern counties on 10-year leases, and tests will no doubt be given various areas as the search continues for more crude reserves.

Cochran Abandonment

The Texas Co., which opened Hockley County's first field, in the southwestern corner, and which is trying to complete a commercial producer on the Walker lands in the southwestern part of Yoakum County, abandoned its wildcat on the Slaughter lands in Cochran County. This test is in the northwestern part of League 130, Carson County School Lands. It was acidized and shot, plugged back to 4,868 feet from a total depth of 4,967 feet to shut off water, but after plugging back, acidizing and shooting, it bailed only a comparatively small amount of oil with water, and was given up as a dry hole. Location is about a mile east of a previous dry hole drilled by Humble Oil & Refining Co., and is about 6½ miles northwest of Wiggins and others producer which may eventually be proven as an extension to the county's first oil field in the southeastern corner.

Probable Extension

While Cochran County was receiving a set back in one area, the Duggan field, the only producing spot in the county, appeared due for a 1-mile east-by-north extension. Devonian Oil Co. No. 1 Duggan, in the northwest corner of Labour 11, League 55, Oldham County School Lands, showed saturation in cores taken from 5,002 feet to 5,015 feet. Standard tools are being rigged up to carry the test deeper into the lime pay zone, after a 7-inch oil string was run and cemented at 4,903 feet. It will be some time before the test is completed as wells in this part of the basin are shot and acidized and require considerable work before they are finally put on the completion list. Tight, hard lime is responsible for this delay. The lime does not yield the oil as it does to the south, in other fields, consequently big acid loads and shooting are resorted to in order to produce oil at its utmost.

The Standard Oil Co. of Texas is preparing to complete No. 1 M. B. Sawyer, southeast corner of section 576, Block D, John H. Gibson Survey, three-quarters of a mile northeast of the Bohago pool discovery in the southwestern part of Yoakum County, giving the test a shot in the lime section. Total depth of the hole is 5,403 feet, and it has been showing considerable oil, appearing as an extensioner, the first to this recently opened pool.

The Shell Petroleum Corp. will drill an important location about midway between the Denver pool in southwestern Yoakum County and the Wasson field in northern Gaines County. Location is in the southwest corner of section 828, Block D, John H. Gibson Survey, about 3½ miles east by south of the Denver discovery and about the same distance north of production in the Wasson field. If it proves a producer it will no doubt be a connecting link to the two producing areas, which would make a field at least 9 miles in length from southeast to northwest.

Gas and Water

The Continental Oil Co. No. 1 Marrs, in the northwest quarter of section 20, Block 54, Township 2, T.&P. Survey, about 7 miles northwest of the Wheat field and about 12 miles southeast of the Mason field, and on the trend between them, in Loving County, appeared important when it showed 900,000 feet of gas at 4,288-90 feet in the Delaware sand topped at 4,227 feet, but it drilled into salt water at 4,313-26 feet, which increased to a hole full when it was deepened to 4,344 feet. Abandonment now appears certain.

Another wildcat, Barnett Petroleum Co. No. 1-B W. D. Johnson, in the extreme northwestern corner of Loving County, also looked disappointing as it drilled into salt water with a showing of oil at 3,153-67 feet. It was shut down at 3,174 feet in sand, and will be plugged back in an effort to shut off water and make a Delaware sand producer. The Delaware lime was topped at 3,089 feet and the sand at 3,131 feet. Elevation is 2,910 feet. Location is in the southeast quarter of section 2, Block 57, Township 1, T.&P. Survey, about one-half mile east of a small well developed by Lewis & Slagel several years ago, which well was not correctly completed on account of casing trouble.

More Water

Rav Albaugh, who opened the first production to Dawson County, in the northwestern part of the county, in section 45, Block M, E.L.&R.R. Survey, appears to have a disappointment in his No. 1 Dewey Hogg, in section 13, Block 34, Township 4n, T.&P. Survey, in the southeastern part of the county. It struck sulfur water at 3,810 feet, and shut down for orders at 3,892 feet, with 800 feet of water in the hole.

The wildcat of M. S. Ingleright & Hults, near Maryneal in southern Nolan County, has proven a failure and orders have been issued to abandon it at a total depth of 4,063 feet. Location is on the G. W. Cochran lands, in section 113, Block 1-A, H.&T.C. Survey.

Another reported planned test for Nolan County is to be located near Sweetwater in the northern part of the county. A block of some 5,000 acres has been taken in the area, with Walter Boothe of Sweetwater and associates interested in same.

Scheduled for Ordovician

The General Crude Oil Co., which a couple of weeks ago abandoned one test in the southeastern part of Stonewall County, and which has missed the Fisher County lime pay horizons in its No. 1 Harrison, in the NW cor. of the D. Hardecrow Survey, 1½ miles north of its initial test in the area, is reported planning to carry this second test to the Ordovician lime in quest of production if it is not found at shallower levels. It is now shut down at 3,580 feet. The company's block lays between Hamlin and Aspermont.

Northwestern Ector County is to get an outpost test when the Milhoan Drilling Co. drills in the NW quarter of section 3, block A, P.S.L. Survey, 4 miles north and a little east of the Goldsmith field. The Gulf Oil Corp. farmed out the E half of the W half of the section for the test. Another outpost test for the area is that of Borsodi and others on TXL lands, in section 21, Block 45, Township 1n, T.&P. Survey, about one-half mile west of production.

Lubbock County Activity

H. N. Harris of Fort Worth is selling spreads to help finance a proposed 5,500-foot wildcat test in the southeastern part of Cochran County, and the Texas Pacific Coal & Oil Co. and Seaboard Oil Co. have taken a large block southwest of the town of Idalou, northeast of the town of Lubbock in the northeastern quarter of Lubbock County, where a geophysical "high" is reported located.

The Harris test in Cochran County is expected to be sunk in the S half of Labour 26, League 96, Mills County School Lands, on a block of some 4,000 acres held by the independent, the location to be about 6 miles north of P. N. Wiggins and others No. 1 Carrie Slaughter Dean, which recently came in as a small producer, and which may extend the Duggan pool 4 miles to the northwest.

Tom Green Leasing

In Tom Green County, in the southeastern part of the West Texas district, the Magnolia Petroleum Co., Cities Service Oil Co., Sun Oil Co. and others have been taking leases and renewing old leases.

The Plymouth Oil Co. recently purchased a large block in the southeastern part of the county, and others have been buying on various sides of the block. The Magnolia Petroleum Co. purchased some 1,760 acres, southeast of the Plymouth block, on the T. Herring lands.

Cities Service Co. purchased its acreage 4 miles northwest of Christoval. Some 1,290 acres were assigned in this area on the Will C. Jones ranch, and John G. Shepperson leased 947 acres to the company under 10-year commercial leases. An unidentified operator has taken 1,385 acres adjoining the Plymouth block on the north, and Tide Water Associated and Sun Oil Co. have renewed 10-year commercial leases on some 3,240 acres located about 2 miles southwest of Knickerbocker, in Block 20, H.&T.C. Survey.

Humble Oil & Refining Co.'s deep test on the western side of Tom Green County has created new interest in acreage in this county, and other tests are expected to be drilled within the not distant future. Plymouth is now core drilling its block for geological information, and may start a test on it when this work is completed.

WEST CENTRAL AND NORTH TEXAS

Bosque County, which has seen but little oil activity heretofore, is to receive a 4,500-foot test in its extreme northeastern corner, near Kopperl. Location for the test is on the W. G. Powell farm in the J. H. Raymond Survey, on a block of some 12,000 acres assembled by Coggin Poindexter of Cleburne. W. H. Sessions of Dallas geologized the block. This location is near a test drilled about 13 years ago by the Telegram Oil Co. on the J. W. Burns farm, about 2½ miles east of Kopperl. That hole was junked because the bit could not be recovered from the hole.

Deep Test

The Humble Oil & Refining Co. is planning on drilling a 4,000-foot wildcat test in the southwestern part of Throckmorton County, on a block of some 4,000 acres. The block centers in Block 2, A.B.&M. Survey, and was assembled by F. Craig Morton of Abilene. This block is near the Haskell-Throckmorton line and near a large block held by the Forest Development Corp. which will no doubt sink a similar test in the near future.

R. F. Gilman of Cisco, has staked location for a 2,500-foot wildcat northwest of Clyde and 10 miles east of Abilene, in northern Callahan County. Location is on the W. A. Young farm, in section 37, B.B.B.&C. Survey.

New Pay Short-Lived

The Iron Mountain Oil Co. No. 2 Jones and Stasney, located in section 196, B.B.B.&C. Survey, in the Avoca field in northeastern Jones County, which was completed last week as a 425-bbl. per day pumper from the Saddle Creek lime logged at 1,583-87 feet, produced around 1,200 bbls. of oil from this strav, freak sand and then went dry. The company had moved the ma-

chine to an east offset location to drill to the regular Canyon pay in the field, but has moved the machine off that location and back over the first hole to carry it on down to the Canyon.

A deep wildcat, drilled to 4,400 feet by the Red Bank Oil Co. on the W. O. Parrott lands, in T.E.&L. Survey, has been given up as a dry hole in the deeper horizons. Salt water prevented plugging back and it is being abandoned.

The South Vernon field in Wilbarger County has been extended over a mile to the northeast by the King Oil Co. No. 1 R. L. Castlebury in section 68, Block 14, H.&T.C. Survey. It logged sand at 2,164-87 feet and as given a shot of nitroglycerin. It is being cleaned out and is estimated good for from 200 to 300 bbls. per day, proving up more territory to this old producing area.

Grayson and Cooke Tests

The Whitesboro test of the Denver Producing & Refining Co., located about 2½ miles northwest of that town, on the Cannon lands, in northwestern Grayson County, is shut down at 5,011 feet. This test opened production in the area last summer when it produced 37 bbls. of oil and 100 bbls. of water per day from sand logged at 2,388 feet. Whether or not it will be plugged back to reproduce from that horizon is not known, but a second location in the area, a little over a mile west and south of this test, will be of utmost importance to the Denver company which holds a block of 8,000 acres surrounding its discovery. Whitfield, Peason and Grimes are to sink the second test, contract calling for a 2,500-foot hole on the W. G. Dozier farm, in the W. B. Hamilton Survey, Cooke County. This location is south and east of the Big Indian producer which has been producing for 10 years on the Davis lands, about 1 mile west of the Grayson-Cooke County line in Cooke.

PANHANDLE DISTRICT

Since assembling and leasing a block of 7,000 acres near Truscott in King County, the Indian Territory Illuminating Oil Co., Texas Co. and S. A. Guiberson have leased 1,400 acres on the edge of the former block, between Knox City and the Brazos River. A 4,000-foot test is planned for the block.

The Pindu Oil Co. has staked location for a wildcat on the McAfee lands, in section 38, Block A-6, H.&G.N. Survey, about 10 miles northeast of LeFors in Gray County, on a block of 9,600 acres. It is scheduled to drill to 3,500 feet. Location is about 4 miles from the nearest production, which is to the southwest, and 5 miles to the west is another producer in section 15, J. C. Short Survey. This will be an important test for the basin and will seek the Dolomite pay from which wells are producing in the Gray County field.

Bob Murphy is moving in materials for his wildcat in section 4, Block 7-T, T.&N.O. Survey, in Dallam County. Contract calls for a 4,000-foot test. Sam Albright and Howard Lathem of Dalhart assembled the block, and the test will seek an extension of the Moore County field which is to the east.

PANHANDLE COMPLETIONS

Carson County

E. W. Means No. 1 H. B. Price, dry and abandoned, 3,224 feet.

Gray County

Cities Service Oil Co. No. 8 Crow, 3,280 feet, 743 bbls. on pump; No. 4-A Meers, 3,512 feet, plugged back to 3,242 feet, shot, 136 bbls. on pump. Jones and others No. 7 Culler, 3,320 feet, shot, 695 bbls. on pump. Kewanee Oil & Gas Co. 4-B Morse, 2,790 feet, shot, 303 bbls. on pump. Skelly Oil Co. No. 88 Schafer Ranch, 3,342 feet, shot, 654 bbls. on pump.

Hutchinson County

Alma Oil Co. No. 1-C Whittenburgh, 2,733 feet, shot, 341 bbls. on pump. Phillips Petroleum Co. No. 27 Cockrell, 3,003 feet, shot, 517 bbls. Rayden Oil Co. No. 2 Mayer, 3,108 feet, shot, 855 bbls. on pump; No. 1 Mayer, 3,188 feet, plugged back to 3,120 feet, shot, 764 bbls. on pump. Stanolind Oil & Gas Co. No. 11-C Ware, 3,089 feet, 662 bbls. on pump. Stansylvania Oil Co. No. 1 Stephenson, 3,315 feet, plugged back to 3,310 feet, 30 bbls. oil and 20 bbls. water on pump. Whittaker Oil Co. No. 2 Starnes, 3,170 feet, shot, 949 bbls. on pump.

Moore County

Phillips Petroleum Co. No. 1 Preston, 3,150 feet, plugged back to 3,075 feet, shot and acidized, 17,261,000 feet gas; No. 1 J. Ray, 3,150 feet, plugged back to 3,070 feet, acidized, 67,000,000 feet gas. Shamrock Oil & Gas Co. No. 1 McDowell, 3,250 feet, plugged back to 3,135 feet, 28,180,000 feet gas; No. 8 J. T. Sneed, Jr., 3,204 feet, plugged back to 2,725 feet, acidized, 31,830,000 feet gas. Shell and others No. 1 Bartlett, 2,792-3,290 feet, 51,800,000 feet gas; No. 1-B Donelson, 2,685-3,160 feet, 67,500,000 feet gas.

WEST TEXAS COMPLETIONS

Andrews County

Humble Oil & Refining Co. No. 30 J. S. Means, 4,450-4,530 feet, acidized, 423 bbls. on pump.

Crane County

American Liberty Oil Co. No. 6 Tubbs, 4,264-4,400 feet, acidized, 810 bbls. Gulf Oil Corp. No. 161 McElroy, 2,845-2,989 feet, shot, 356 bbls.; No. 12 Tubbs, 4,260-4,420 feet, acidized, 2,973 bbls. Loffland Brothers No. 3 Tubbs, dry and abandoned 7,158 feet, elevation 2,540 feet, top Ellenberger 5,806 feet.

Ector County

Atlantic Refining Co. No. 4-E Cummins, 4,150-4,240 feet, acidized and shot, 583 bbls. Barnsdall Oil Co. No. 3 Foster, 4,230-4,318 feet, shot, 650 bbls. Devonian Oil Co. No. 2-E Scharbauer, 4,145-4,200 feet, plugged back to 4,183 feet, shot and acidized, 442 bbls. W. H. Dunning, Jr. No. 2 Scharbauer, 4,142-4,225 feet, acidized, 1,100 bbls. Humble Oil & Refining Co. No. 7 Cowden, 4,220-76 feet, acidized, 1,512 bbls. Landreth Oil Corp. No. 7-I Scharbauer, 4,153-95 feet, acidized, 1,966 bbls.; No. 1-K Scharbauer, 4,158-88 feet, acidized, 1,546 bbls. Mid-Continent Petroleum Corp. No. 1 Hinkle, 4,185-4,319 feet, shot, 465 bbls. on pump. Standard Oil Co. of Texas No. 1 Cochran, 4,120-4,226 feet, shot, 710 bbls. Stanolind Oil & Gas Co. No. 58 Cowden, 4,155-4,303 feet, shot, 904 bbls.; No. 5 Johnson, 4,080-4,215 feet, shot, 108 bbls.

Gaines County

A. G. Carter and others No. 1-B Wasson, 4,902-90 feet, acidized, 2,163 bbls.

Howard County

Humble Oil & Refining Co. No. 4 Douthitt, 2,820-2,990 feet, acidized, 1,182 bbls. on pump. Standard Oil Co. of Texas No. 9 Dodge, 2,510-2,807 feet, shot, 228 bbls. Ward Oil Co. No. 27 Roberts, 2,545-65 feet, 1,122 bbls. on pump.

Pecos County

Cardinal Oil Co. No. 17-A Smith, 338-85 feet, 10 bbls. on pump. Paul Childress, Trustee No. 22 Smith, 388-410 feet, 17 bbls. on pump. Stanolind Oil & Gas Co. No. 21-B Tippett, 457-77 feet, 47 bbls. on pump.

Upton County

Continental Oil Co. No. 1, 2,559-2,639 feet, acidized, 307 bbls. on pump. Gulf Oil Corp. No. 13 Sherk, 2,238-2,313 feet, acidized, 519 bbls. on pump. B. C. Mann No. 3 Hughes, 2,220-2,332 feet, plugged back to 2,260 feet, shot and acidized, 33 bbls. on pump. Rodman and Easter No. 2-B Hughes, 2,261-2,382 feet, acidized, 27 bbls. on pump.

Ward County

Church and McDowell No. 1 Monroe, dry and abandoned, 470 feet. Clark and others No. 3 Green, 2,262-2,323 feet, 397 bbls. F. H. E. Oil Co. No. 8 Green, 2,212-2,450 feet, shot, 326 bbls. Gulf Oil Corp. No. 56 Estes, 2,500-2,640 feet, shot, 950 bbls.; No. 57 Estes, 2,488-2,670 feet, shot, 1,504 bbls. A. E. Lynch No. 6-A Himmel, 2,250-2,410 feet, 216 bbls. on pump. Octagon Oil Co. No. 1 Buchanan, 2,200-2,330 feet, shot, 336 bbls. Roeser-Pendleton, Inc. No. 1-A Johnson, dry and abandoned, 2,215 feet, elevation 2,435 feet. Amerada Petroleum Corp. No. 4-A Daugherty, 2,870-2,960 feet, shot, 825 bbls.

Winkler County

Amon G. Carter No. 14 Walton, 3,310-72 feet, shot, 334 bbls. Champlin Refining Co. No. 1 Cowden, 2,813-92 feet, shot, 32 bbls. on gas lift. Emperor Oil Co. and others No. 2 Thompson-Cowden, 2,663-2,960 feet, 1,004 bbls. Gulf Oil Corp. No. 18 Clapp, 2,740-3,100 feet, 251 bbls.; No. 64 Daugherty, 2,790-3,020 feet, shot, 1,600 bbls.; No. 19 Keystone, 3,308-3,700 feet, shot, 348 bbls.; No. 20 Keystone, 3,275-3,450 feet, shot, 301 bbls. Magnolia Petroleum Co. No. 100 Walton, 3,055-3,220 feet, shot, 76 bbls.; No. 105 Walton, 2,820-2,925 feet, shot, 925 bbls. J. C. Maxwell No. 7 Gartex, 2,790-3,091 feet, shot, 1,797 bbls. Navarro Oil Co. No. 4 Drane, Trustee, 2,720-3,075 feet, shot, 767 bbls. Richardson Oils, Inc. No. 3-B Humble-Walton, 3,333-3,535 feet, plugged back to 3,470 feet, shot, 249 bbls. Skelly Oil Co. No. 3-B Leck, 3,090 feet, acidized, 786 bbls.

NORTH TEXAS COMPLETIONS

Archer County

O. T. Anderson No. 11 Justice, 870 feet, dry. Humble Oil & Refining Co. No. 8 Wolf, 1,325-46 feet, 15 bbls. Van Wormer & Boller No. 7 Falls, 1,191 feet, dry. Westmount Oil Co. No. 1 Shropshire, 1,775-78 feet, 105 bbls. White & Duncan No. 1 J. R. Jones, 890 feet, dry.

Cooke County

Merrick No. 6 J. W. Hess, 1,263-1,371 feet, 15 bbls. Pace Petroleum Co. No. 12 R. E. Aldridge, 1,136-52 feet, 40 bbls. Frank Schoonover No. 5 Wilson, 1,861-74 feet, 175 bbls. Tydal Refining Co. No. 2 Wilson, 2,001 feet, dry.

Foard County

O. P. Burnham No. 1 T. L. Ward, 2,106 feet, dry. Texas Co. No. 12 Johnson, 3,556-61 feet, 500 bbls.

Montague County

Barnsdall Oil Co. No. 5 N. J. Howard, 1,641 feet, dry. Sinclair Prairie No. 21 D. T. Holt, 1,661-83 feet, 245 bbls.

Wichita County

Amtex Petroleum Co. No. 1 State of Texas, 466-80 feet, 25 bbls. Bonner and R. O. Harvey No. 1 S. I. and H. M. Munger, 3,835-50 feet, 1,250 bbls. Hawkins & McQuigg No. 14 E. E. Goetze, 495-635 feet, 5 bbls. Mogren & Anderson No. 2 K. T. Goetze, 1,528-32 feet, 25 bbls. Perkins & Cullum No. 7 S. B. Burnett A, 1,568-80 feet, 20 bbls. George Proctor No. 17 Foster A, 1,929-42 feet, 125 bbls. Schwegler and others No. 2 E. E. Goetze, 869 feet, dry. S. H. Walton and others No. 6 Will Burnett, 487-96 feet, 8 bbls.; No. 7 Will Burnett, 503 feet, dry.

Wilbarger County

C. U. Beasley No. 2 Waggoner, 3,125 feet, dry. Humble Oil & Refining Co. No. 26 Waggoner H, 3,083 feet, dry. Phillips Petroleum Co. No. 199 Waggoner, 3,040-56 feet, 875 bbls.; No. 1 Waggoner LLL, 2,298-2,314 feet, 11 bbls.

Young County

S. S. Alexander Oil Corp. No. 5-A L. D. Clark, 875 feet, dry; No. 5-B L. D. Clark, 860 feet, dry; No. 6-A L. D. Clark, 770 feet, dry. Paul Atchley No. 1 D. D. Dickerson, 798 feet, dry. Howard Petroleum Corp. No. 1 G. P. Stewart, 536-50 feet, 5 bbls. R. E. Lowry No. 1 R. J. McCloud, 850 feet, dry. Petroleum Production Co. and others No. 13 J. L. Boone, 550 feet, dry. Sams & Watson No. 7 E. B. Calvin, 595 feet, dry; No. 22 F. F. Cullers, 550-73 feet, 25 bbls. W. L. Schenck No. 1 S. H. Simmons, 550 feet, dry. R. E. Skinner No. 1 J. M. Davidson, 850 feet, dry. Stuckey Oil & Gas Co. No. 1 Carroll Baldwin, 568 feet, dry. Ben Theimer No. 1 A. B. Vanmeter, 1,102 feet, dry. Underwood Drilling Co. No. 1 L. Body, 852 feet, dry. West & Honea No. 3 B. N. Honea, 824-41 feet, 20 bbls. Wise & Jackson No. 17 F. M. Cullers, 542-65 feet, 8 bbls. J. G. Wootten and others No. 1 S. J. Furr, 758 feet, dry. Worth Oil Co. No. 4 E. E. Hall, 765 feet, dry. S. S. Alexander No. 2 Goldstone, 4,120 feet, dry. Frank W. Bennett No. 2 R. V. Tidwell, 3,583-3,698 feet, 200 bbls. T. D. Humphrey No. 1 S. R. Ragland, 3,770-97 feet, 350 bbls.

CENTRAL TEXAS COMPLETIONS

Callahan County

Ungren & Frazier No. 1 Hutchinson, section 135, B.B.B.&C. Survey, total depth 1,180 feet, dry and abandoned.

Jack County

Bennett Petroleum Corp. No. 2 J. S. W. Owens, oil sand 3,177-99 feet, total depth 3,208 feet, initial production 207 bbls. per day. W. B. Hamilton No. 3 Mrs. M. A. Smapley, total depth 3,150 feet, dry and abandoned. Hammon & Herbert Oil Co. No. 10 Rhodes, oil sand 3,011-55 feet, initial production 503 bbls. per day. Hanlon-Buchanan, Inc., No. 1 Mrs. E. W. Rankin, oil sand 2,710-16 feet, total depth 2,725 feet, initial production 100 bbls. per day; No. 3 Rhodes, oil sand 2,263-73 feet, initial production 225 bbls. per day. Moncrief & Showers No. 2 Box, oil sand 3,153-79 feet, total depth 3,187 feet, initial production 185 bbls. per day. Mullendore, Berry & Berry No. 6 Clayton (South), gas sand 3,055-60

(Continued on Page 152)

Texas and Louisiana Gulf

NEW LOUISIANA SALT DOME; IMPORTANT WILDCAT TESTS

By
F. L. SINGLETON

HOUSTON, Tex., Oct. 25.—The discovery of a new salt dome structure and the announcement of three important wildcat tests held the attention of operators along the Louisiana Gulf Coast, while on the Texas side the testing of two important wildcats held considerable interest.

Gulf Oil Corp. No. 3 Louisiana State located in the Timbalier area, southern Lafourche Parish, Coastal Louisiana, which has been regarded for several weeks as a possible pool opener topped salt at 7,741 feet and cored the formation to 7,757 feet at which point it is shut down awaiting orders. Before encountering the salt sand showing oil was cored at 7,734-38 feet and shale from 7,738-41 feet. The well made its appearance as a pool opener several weeks ago when it showed 1,000 feet of 32-gravity oil on a drill stem test at 6,749-6,846 feet and it is very probable that the hole will be plugged back and the well completed in this section which is the Miocene sand. The structure is located in section 36-23s-21e.

In the Gibson field, Terrebonne Parish, Shell Petroleum Corp. No. 3 Pelican, section 19, has been plugged back to 9,506 feet from a total depth of 9,526 feet where it showed salt water and some oil on a drill stem test. No. 3-B Realty in section 18, is drilling in shale below 5,666 feet.

The second producer for the North Crowley field, Acadia Parish, was apparently assured by Humble Oil & Refining Co. No. 1 Ohlenforst, a northeast offset to the discovery well in section 45. Sand showing oil was topped at 8,102 feet and the hole was cored to a total depth of 8,117 feet where a 16-minute drill stem test was made at 8,065-8,117 feet and it showed 150 pounds of working pressure, 180 feet of mud, 1,350 feet of oil and 420 feet of salt water. Casing is being run for a production test. The company has rigged up No. 1 May M. Habetz in the S half section 3.

10,154 Feet Deep

Texas Co. completed another 10,000-foot producer in the Lafitte field, Jefferson Parish, No. 2 Madison Realty Co. in section 20-17-24e. Perforations were made in the 7⅝-inch casing at 10,018-54 feet and it flowed 1,754 bbls. per day through a three-eighths inch choke with tubing pressure 1,300 pounds.

First attempts to open a deep producing horizon for the Lake Hermitage field, Lafourche Parish, proved a failure and the hole is being cored ahead. The test was made by Gulf Oil Corp. at No. 7 Lafourche which tested salt water at 8,119-29 feet, the total depth. As the hole was cored ahead, sand showing oil was encountered at 8,139-44 feet and another test will probably be made.

In the Jeanerette field, St. Mary Parish, Herton Oil Co. No. 1 Banta Roanes, section 401, has been officially completed for an initial production of 225 bbls. of net oil per day with 15 per cent salt water. It is flowing through perforated casing at 10,412-24 feet opening the four producing horizons for the field.

A scheduled production test to be made on an east outpost test of the Edgerly field, Calcasieu Parish, was being awaited with interest. Crusader Petroleum, Inc. was preparing to ream hole at No. 1 Miller Brothers preparatory to running 5-inch liner to bottom at 6,523 feet. Three sands have been encountered at 6,177-94 feet, 6,110-21 feet and from 6,068-82 feet. Location is in section 27-9s-11w.

Texas Gulf Coast

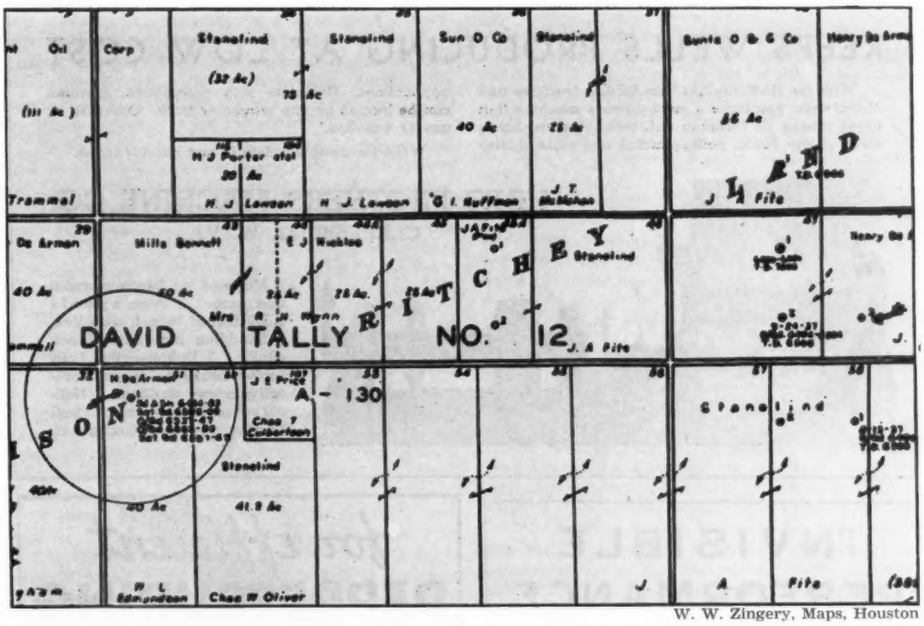
Along the Texas Coast, Merit Oil Co. was testing No. 1 Wright at the Cedar Bayou Prospect in Chambers County. The first test since the hole was plugged back from a total depth of 7,515 feet, was made through perforations at 6,424-34 feet and in 22 minutes it tested 3,000 feet of salt water with a slight show of oil with no pressure. It is believed that the test was actually from the lower perforations as the top section was found to be cemented to the oil sand in a previous squeeze job. A second test is being made around 6,424 feet.

Storage tanks were being erected for a production test at Strake Petroleum Corp. No. 1 W. T. Finley, about 6,000 feet southeast of production at the Hardin field in Liberty County. Seven-inch casing was cemented on bottom at a plugged back depth of 7,560 feet and perforations were made at 7,534-40 feet. On a 19-minute drill stem test it showed 2,000 pounds and recovered 180 feet of oil. With packer set above the perforations the casing was reshot at 7,548-53 feet and it showed 180 feet of oil, 70 feet of mud and 1,350 feet of water, which was used as a cushion. To the northwest and 1,000 feet south of production, Woodley Petroleum Co. No. 3 McMurtry was completed through perforations at 7,585-92 feet for an initial production of 517 bbls. per day through a quarter-inch choke with tubing pressure 850 pounds and casing presure 800 pounds.

At Sandy Point, Brazoria County, Henry DeArman No. 3 J. A. Fite, an east offset to No. 2 Fite, was tested from a screen setting at 6,514 feet to 6,520 feet, the total depth, and showed salt water with a small show of oil. Screen and liner is being pulled and it will be carried deeper. The same operator's No. 1 Edmundson, about a mile west of production, is standing with 7-inch casing cemented at 6,585 feet, preparatory to testing a sand section from 6,464-6,565 feet.

Two completions were reported for the north flank of the West Columbia field, Texas Co. No. 1 Gulf Land flowed 556 bbls. per day through a quarter-inch choke at 5,365-5,483 feet, while Texas Co. No. 3 Phillips flowed 237 bbls. per day through a quarter-inch choke from sand at 5,577-5,670 feet.

In the extreme north end of the Heyser field, Calhoun County, Gulf Refining Corp. No. 1 Schultz has been completed in the 5,400-foot sand for an initial production of 21 bbls. per hour through a quarter-inch choke. This is the first test to find production from this sand in this part of the field, as all production has been found in the 5,700-foot horizon. This indicates that the structure is dipping off in this direction and a much larger producing area is expected. The first evidence of faulting in the field was encountered at Gulf Oil Corp. No. 1 T. P. Traylor on the west side of the north extension area. The hole is bottomed in 2 feet of oil sand at 5,753 feet and the well is assured of making a producer as it showed 1,000 feet of pipe line oil. The interesting feature is that while the balance of the 5,700-foot wells have encountered several feet of gas cap above the oil section, no gas sand was encountered in the Gulf test.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tiliate. Humble Oil & Refining Co. No. 2 Kirby Lumber Co. located in the P. Garcia Survey, topped sand at 5,193 feet and is bottomed at 5,196 feet with 5½-inch casing cemented at 5,188 feet.

At the Labelle field, Jefferson County, Sun Oil Co. was preparing to make a production test at No. 1 John Ward. Top of the cement was found at 8,830 feet and the casing is being perforated above that point. The hole was drilled to a depth of 10,052 feet where it tested salt water. It is 933 feet south of No. 2 Broussard and Hebert in the William Burton Survey.

On the southeast flank of the old Goose Creek field, Harris County, Gulf Oil Corp. was testing No. 7 Hirsch State located in the William Scott Lower League. The hole was plugged back from a total depth of 6,462 feet to 4,441 feet and 7-inch casing was cemented at 4,458 feet. Perforations were made at 4,398-4,410 feet and it showed 40 pounds of pressure 91 feet of mud and 1,092 feet of oil. This apparently opens a new sand for the field and the outcome will probably result in an active drilling campaign.

California Fields

(Continued from Page 130)

1,660 feet and the hole was finished with 91 feet of 6⅝-inch liner including 69 feet of 140-mesh screen. Sunset Oil Co. No. 4 Vedder was good for only 81 bbls. of clean 15.6-gravity oil daily from 1,510 feet. No. 5 Vedder, which encountered top of the Vedder at 1,541 feet, looks somewhat better although indications point to a small completion.

Midway-Sunset

Standard Oil Co. completed an excellent well in the Midway-Sunset field of Kern County when No. 3-13-D in section 13-32-24 was brought in flowing 816 bbls. of clean 25.6-gravity oil per day from 3,590 feet after the hole had been finished with 371 feet of 6⅝-inch liner carrying perforations at 3,469-92 feet and at 3,531-89 feet. Standard is starting four new wells in this field and all should result in commercial production upon completion. The Texas Co., running four strings of tools, has completed a new rig for No. 28 Midway in section 32-32-24. Honolulu Oil Corp. No. 16-A in section 14-32-24 has been completed pumping 199 bbls. of clean 29.3-gravity oil daily from 3,165 feet and Merritt-Annex Oil Co. No. 6 in section 25-12-24 has been completed pumping 247 bbls. of clean 27.1-gravity oil per day from 2,825 feet after the hole had been carried down to 2,880 feet and plugged back to the completion depth because of bottom water. Honolulu Oil Corp. No. 16-A picked up the top of the pay at 3,149 feet and the hole was finished with 66 feet of 4¾-inch liner including 31 feet of 120-mesh screen. The crew from this well has been moved to No. 26-A in the same section and drilling equipment is being rigged up.

San Joaquin Basin

Drilling operations resulted in completion of two new wells in the Fruitvale field and one each at Edison, Kern Front and Round Mountain. In the latter area, Honolulu Oil Corp. completed No. 23 in section 20-28-29 pumping 276 bbls. of clean 18.1-gravity oil daily from 1,904 feet. In the Kern Front area, Republic Petroleum Co. has completed No. 3 Cal. Tech. pumping 225 bbls. of clean 16.1-gravity oil daily from 1,886 feet and should have No. 14 Strassburger tanking oil some time late next week. In the Edison field of Kern County, Monterey Exploration Co. has completed No. 2 Nichols in section 14-30-29 pumping 180 bbls. of 16.2-gravity oil cutting 6 per cent daily from 1,806 feet. This hole was finished with 73 feet of 8⅝-inch liner including 54 feet of 200-mesh screen. Western Gulf Oil Co. completed an excellent producer in the Fruitvale field by bringing in No. 9 Red Ribbon flowing 501 bbls. of 17.5-gravity oil daily through open line from 3,525 feet and is preparing to complete No. 28 Kern County Land in section 14-29-27 from 3,058 feet. Meridian Oil Co. has completed No. 6 Turner pumping 210 bbls. of 17.4-gravity oil cutting 5 per cent daily from 3,072 feet. This new well was finished with 63 feet of 7-inch liner including 43 feet of 300-mesh screen landed on bottom.

Coastal Area

In the Rincon field of Ventura County, Chanslor Canfield Midway Oil Co. completed No. 16-B Hobson flowing 318 bbls. of relatively clean 29.8-gravity oil daily from 4,650 feet and should have No. 17-B Hobson tanking oil shortly. This well was finished with 189 feet of 5¾-inch liner included 148 feet of 120-mesh landed on bottom and is flowing through a 20/64-inch bean under a tubing pressure of 290 pounds and a casing pressure of 920 pounds. Gas production is at the rate of 210,000 feet daily. The Texas Co. completed No. 133 Shiells in the Shiells Canyon field of Ventura County flowing 162 bbls. of 36.1-gravity oil through a one-half inch bean from 4,123 feet but the output was still cutting 20 per cent and may necessitate some remedial work. In the Bardsdale district of Ventura County, Union Oil Co. has completed No. 16 Robertson in rocks believed to be of Eocene age but it was good for only 163 bbls. of clean 35.4-gravity oil daily from 6,804 feet on the beam. Tide Water Associated Oil Co. in the Ventura Avenue field completed No. 28 Ventura Land & Water flowing 290 bbls. of 25.8-gravity oil cutting 15 per cent and 385,000 feet of gas daily from 7,138 feet. Its No. 137 Lloyd, one of the deepest producers in the field, was brought in flowing on a compressor at the rate of 191 bbls. of 26.3-gravity oil daily from 10,060 feet. Production of this new well has failed to clean up and is still cutting around 20 per cent.

New Gas Wells

Two new dry gas wells were completed in the Rio Vista gas field but neither was given a potential production test. They should be good for at least 15,000,000 feet each, however, as other completions in the same field have all shown a production considerably higher than this. These two new gas wells were Amerada Petroleum Corp. No. 1 Sacramento in section 24-4-2 and Tracy Drilling Co. No. 1 Hanson in section 25-4-2. The former was finished at 4,347 feet and shows a tubing pressure of 1,625 pounds and a casing pressure of 1,625 pounds while standing shut in. The latter was bottomed at 4,415 feet and shows a shut-in pressure of 1,690 pounds on tubing and 1,950 pounds on casing. This well extends the productive limits of the field and proves up some additional acreage for Amerada Petroleum Corp. In section 36-4-2 Amerada has completed a new rig for No. 1 Deterding and should spud in during the forthcoming fortnight.

Los Angeles Basin

Two new producers are expected in the Hilldon section of the Long Beach field in the next few days as Hilldon Petroleum Co. No. 3 Flood Control is in the pay at 4,002 feet, and Union Oil Co. is making preparations to complete No. 1 Oil Operators which topped the pay at 4,106 feet. In the older section of the Long Beach field Richfield Oil Corp. recompleted No. 2 Hartwell pumping 70 bbls. of 20.9-gravity oil daily after redrilling and deepening the hole to 3,540 feet. Union Oil Co. completed an excellent well in the Dominguez field when No. 45 Hellman was brought in flowing 743 bbls. of clean 28.5-gravity oil from the first Callender zone at 4,220 feet. This new well is flowing through a 1½-inch bean. The hole was finished with 339 feet of 5¾-inch liner including 317 feet of perforated. In the Santa Fe Springs field Union Oil Co. is making splendid progress with No. 100 Bell, a deep test that ran into mechanical trouble more than a year ago at 10,789 feet. The company, which is drilling a new hole after whipstocking past the fish in the original hole, is going ahead at 10,470 feet. The well had some showings in the original hole but mechanical trouble prevented a test and so the importance of the showing remains to be seen.

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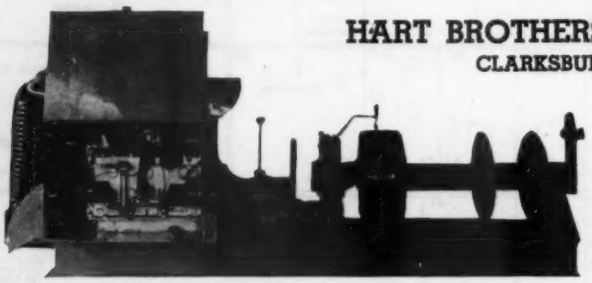

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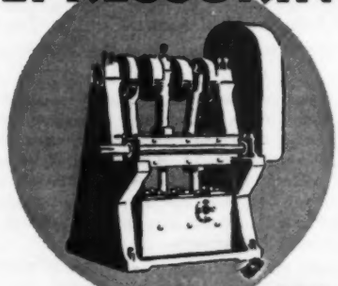

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Central West

By STAFF CORRESPONDENT

SIXTEEN NEW OIL WELLS IN THE CENTRAL BASIN FIELDS

MATTOON, Ill., Oct. 25.—Sixteen new oil wells were brought into being in the central Illinois fields in the past week, but a very important wildcat in Clay County was dry at 3,031 feet and will be deepened. It was Gulf Oil Corp.'s test on the Laughton farm in NW NE NW section 29-4n-8e. It had saturation in the McClosky sand but when pipe had been set and plug drilled it did not show production. It is not known how deep the test will be drilled.

The Illinois Geological Survey's monthly report for September showed 124 oil wells completed in the first nine months of this year, of which 16 were in the Bartelso field in Clinton County; 54 in the Patoka field in Marion County; 41 in the Clay City field in Clay County; three in the Cisne field in Wayne County and 10 in the Noble field in Richland County.

Following is the list of oil wells completed in the past week.

Clay County Completions

Graham & Duncan No. 1 Carroll, NE SE NE section 8-2n-8e, Clay County, had Weller sand at 2,675 feet, and pay at 2,975-84 feet, total depth 2,994 feet. It flowed 702 bbls. the first 24 hours.

Graham & Duncan No. 2 Carroll, SE SE NE section 8-2n-8e, Weller sand at 2,669 feet, pay at 2,996-3,000 feet, total depth 3,003 feet, flowed 500 bbls. the first 24 hours.

Pure Oil Co. No. 3 Chaffin, NW SW SW section 27-3n-8e, Weller sand at 2,605 feet, pay at 2,981-87½ feet, total depth 2,998 feet, flowed 392 bbls. in 24 hours.

Pure Oil Co. No. 12 Poppe, NE SW NW section 27-3n-8e, had pay at 2,965-73 feet, total depth 2,997 feet, flowed 414 bbls. in 24 hours.

Pure Oil Co. No. 5 Wilkins, NE SE SE section 28-3n-8e, pay at 2,957-80½ feet, flowed 300 bbls. in 24 hours; total depth 2,993 feet.

Pure Oil Co. No. 2 N. Moseley, SW SE SE section 33-3n-8e, pay at 2,957-60 feet, 2,974-78 feet and 2,986-91 feet, total depth 3,004 feet, pumped 86 bbls. in 24 hours.

Pure Oil Co. No. 2 Travis, NE NE NW section 33-3n-8e, pay at 2,971-74 feet, total depth 2,988 feet, flowed 350 bbls. in 24 hours.

Pure Oil Co. No. 6 B. Travis, NW NW NE section 33-3n-8e, flowed 97 bbls. naturally in six hours, then was acidized and flowed 282 bbls. net in 24 hours. Pay was at 2,955-62 feet, 2,967-77 feet; total depth 2,990 feet.

Pure Oil Co. deepened the discovery well in the Clay City field, No. 1 Weiler, SE SW SE section 33-3n-8e, from 2,615 feet to 3,013 feet. There was 8 feet of pay between 2,959 and 2,998 feet as follows: 2,959-61 feet, saturation fair; 2,963-66 feet and 2,995-98 feet, saturation good. The well flowed 315 bbls. of oil in 24 hours.

M. O. K. Corp. No. 1 Bemis, SE SE NW section 14-3n-8e, had pay at 2,991-3,017 feet. It was thrice acidized, with 500 gallons, 1,500 gallons and 2,500 gallons and pumped 204 bbls. of oil the first 24 hours.

In Richland County, Ohio Oil Co. No. 3 Arbuthnot, NW NE NW section 8-3n-9e, was acidized twice with 2,000 gallons and pumped only 24 bbls. of net oil in 24 hours from sand at 2,951-61 feet, the total depth.

Carter Oil Co. No. 1 Watkins, NW NW SW section 34-4n-9e, had pay at 3,000-10 feet, and flowed 801 bbls. in 24 hours.

In Marion County, Adams Oil & Gas Co. No. 1-B J. J. Wasem, SW cor. NE NW SW section 28-4n-1e, is a 75-bbl. pumper at 1,437-49 feet, total depth. Adams Oil & Gas Co. No. 6-A Wasem, SE NE NW NW section 28-4n-1e (corrected location) started at 102 bbls. on the pump, from sand at 1,400-33 feet, total depth. Frank Fredericks No. 1 Ballance and others, CNL SE NE SW section 28-4n-1e, had sand at 1,425-44 feet, total depth and pumped 55 bbls. the first 24 hours. Adams Oil & Gas Co. No. 4 Boyd, CWL NE NE NE section 29-4n-1e, is a 50-bbl. pumper at 1,391-1,414 feet.

New Operations

Illinois Oil Developers announced it will drill its first well on a 4,600-acre block in Coles and Cumberland counties. The test will be No. 1 Tomberlin, in SE SE section 21-11n-10e, in Coles County, close to the Cumberland County line. George W. Derrick, engineer for the company, says the test may go to the St. Peter sand (the Wilcox of Oklahoma) if commercial production is not found in upper horizons.

In Clay County, Graham & Duncan have started five operations in the recently discovered extension to the Clay City pool. Their No. 4 Land Bank, SW SE NE section 8-2n-8e, is spudded. No. 5 Land Bank, NE SW NE section 8, is a location; No. 6 Land Bank, SE SW NE section 8, set 10-inch casing at 250 feet and was drilling out plug; No. 7 Land Bank, NW SW NE, and No. 8, SW SW NE section 8, are locations. Pure Oil Co. has started No. 6 Chaffin, 50 feet from north and 1,020 feet from east lines of NE SW section 27-3n-8e.

In Richland County, 13 operations were started in the past week as follows: Pure Oil Co. No. 5 Palmer-Taylor, NW SW SE section 5-3n-9, rigging up rotary; Julius Livingston No. 1 Frutte, NW cor. SE SE SE section 8-3-9, Noble townsite, cellar and pits; Livingston No. 1 Galloway, SE cor. SE SE SE section 8, building rig; Livingston No. 2 Galloway, C SE SE SE section 8, cellar and pits; Roberts and others No. 1 Hanna and others, CWL SE SE SE section 8, building rig; Pure Oil Co. No. 1 Frost, SE cor. SW SW SW section 9-3n-9e, set 10-inch at 1,207 feet and was drilling ahead; Max Pray No. 1 Baker, NW cor. NW SE NW section 16-3n-9, rigging up rotary. Southern Illinois Petroleum Corp. No. 2 Allard, C E half SE NW NW section 16-3-9e, spudded; same company No. 1 Ring, NE cor. NW NW NW section 16-3n-9e, cellar and pits; J. I. Staley No. 1 Public Park, NE SE SE NE section 17-3n-9e, cellar and pits. Mammoth Producing & Refining Co. No. 1 McCauley, SW SE NW section 28-3n-9e, rig. Pure Oil Co. made a location for No. 1 Correll, NW NE SE section 33-4n-9e. Pure Oil Co. No. 1 S. Tatman, SE NE NE section 33-4n-9e, set 10-inch casing at 214 feet and was drilling at 530 feet.

In Marion County, Adams Oil & Gas Co. made a location for No. 3 Freyer, 463 feet from north and 1,107 feet from east lines of SW quarter section 21-4n-1e, and in No. 14 Merryman, 660 feet from north and 1,100 feet from west lines of NW quarter section 28-4n-1e, set 8-inch casing at 96 feet.

In Effingham County, Carter Oil Co. made a location for No. 1 H. Prenner, C W half SW NE section 11-8n-7e.

In Clinton County, Santa Fe Oil & Gas Co. No. 2 Kohrman, SW cor. NE SE section 5-1n-3w, had Benoist sand at 976-99 feet, which was shot with 30 quarts. The crew was cleaning out.

In Clarke County, M. V. Yeager had rig on the ground for No. 1 Robinson, SE SW NW section 17-10n-11w (measured from Indiana principal meridian).

Drilling Operations

In Clinton County, Gross, Erling and others were shut down at 942 feet in No. 1 Eversgerd. SW NW SW section 22-1n-4w. Santa Fe Oil Co. No. 1 C S half SE SE section 4-1n-2w, was shut down at 1,521 feet with a hole full of water. W. C. McBride, Inc., No. 1 Koumeris, C W half SE SE section 27-2n-3w, had Mississippi lime at 1,338 feet, set 6-inch casing at 1,341 feet and drilled to 1,425 feet with nothing showing.

In Christian County, Schlossberg & Sigel No. 3 C. W. Glass, CNL NW SW section 29-12n-2w, was drilling at 2,496 feet in hard lime.

In Bond County Huber Corp. No. 1, SE NW NW section 11-6n-5w, topped Trenton limestone at 2,568 feet and was testing at 2,640 feet.

In Fayette County, Universal Well Service Co. No. 1 County farm, SE NW SE section 36-7n-1w, had Benoist sand at 1,527-33 feet, which showed salt water, and the crew was drilling ahead. Carter Oil Co. No. 1 Mary Miller, C W half NW NW section 12-8n-3e, topped the Devonian at 3,072 feet and drilled to 3,133 feet. Showings of oil were found in cores and drill stem tests. There was a strong odor of sulfur at the bottom of the hole.

In Jefferson County Schlossberg & Sigel No. 1, NE cor. SE section 15-1s-1e, was shut down at 300 feet.

In Effingham County Kingwood Oil Co. No. 1 Bartel, C W half NW NE section 26-6n-5e, toppey McClosky sand at 2,502 feet, and cored to 2,669 feet, total depth, finding only traces of oil.

In Wayne County, Washburn Petroleum Co. was underreaming 6-inch casing at a total depth of 2,907 feet in No. 1 Acola, NW NE NW section 31-2s-8e. Fitzpatrick & Myers will try a squeeze job on their No. 1 Shannon in SW NW SE section 26-2n-8e, in an attempt to shut off water. Duncan Brothers No. 1 Riggs, SE cor. NW NW SE section 27-2n-8e, was drilling at 2,525 feet.

In Hamilton County J. Garfield Buel and others No. 1 Dickey, SE SE SW section 22-3s-7e (corrected location), set 10-inch casing at 200 feet and was drilling at 1,500 feet. Carpenter and others No. 1 Clark, NW NW SW section 32-3s-5e, was drilling hard lime at 3,218 feet.

In Jasper County W. R. Anderson No. 1 Hetzger, C E half NE SE section 10-7n-8e, was drilling at 2,692 feet.

In Pope County, C. C. Whitlock No. 1 Anthis, NW NW NE section 12-11s-5e, was shut down with a showing of oil at 1,337-39 feet, total depth.

In Clay County, two locations south of the discovery well in Clay City extension, section 8-3n-8e, Pure Oil Co. No. 1 Hubble, NE SE SE section 8, was at a total depth of 3,014 feet. It had little if any oil showing. Same company penetrated an oil pay at 3,000-05 feet, total depth 3,020 feet in its No. 2 Bressenden, SW NE NE section 8-2n-8e, and set pipe at 2,962 feet, preparatory to testing. This test is one location north of Graham and others No. 3 Land Bank, NW SE NE section 8, which flowed 175 bbls. in 10 hours from pay at 2,980-3,033 feet, but which is not yet a completion. Gordon Oil Co. No. 3 Land Bank, SW NE SE section 8, was drilling at 1,835 feet. Gordon Oil Co. No. 4 Land Bank, NW NE SE section 8, is a location.

J. C. Shaffer and others No. 1 Leibke, SE SW SW section 17-3n-7e, had the McClosky formation at 2,988 feet and after setting 7-inch pipe at 2,960 feet drilled to 3,001 feet where it swabbed sulfur water. Five-inch casing was then cemented at 2,986 feet and the crew was waiting for cement to set. Southern Illinois Petroleum Co. was fishing at 1,940 feet in No. 1 Nodacker, NW SE SW section 23-2n-7e, and the same company's No. 1 Duff, SE NW NE section 7-3n-8e, was drilling at 1,117 feet. J. E. Milburn had rig on the ground for No. 1 Stringer, SE NW NE section 19-3n-8e. J. V. Wicklund No. 1 McCauley, SW SW SE section 23-3n-8e, at a total depth of 2,999 feet, was acidized with 1,500 gallons and later pumped 43 bbls. of oil net then 5 bbls. of oil and 15 bbls. of salt water. It was drilling ahead at 3,025 feet. Pure Oil Co. No. 6 Charles Wilkins, SW SW SE section 28-2-8e, was drilling at 2,787 feet, and rig was up for No. 7 Wilkins, SW SE SE section 28-2n-8e. Wiser Oil Co. No. 11 D. Smith, NW SW NE section 28-3n-8e, in the main body of the Clay City field, had Weiler sand at 2,636-38 feet. Seven-inch casing was set at 2,630 feet. Pure Oil Co. No. 4 Chaffin, NE NW SW section 27-3n-8e, was drilling at 2,794 feet and No. 5 Chaffin, SE NW SW section 27, was drilling at 2,640 feet. Pure Oil Co. No. 11 Poppe, SE

SW NW section 27-3n-8e, was testing after setting 7-inch pipe at 2,939 feet. It cored 12 feet of saturation between 2,969 and 2,986 feet.

In Richland County, Pure Oil Co. No. 3 Palmer-Taylor, SE SW SE section 5-3n-9e, found pay at 2,948-63 feet, total depth 2,977 feet. Seven-inch casing was set at 2,933 feet. No. 4 Palmer-Taylor, SW SE SE section 5, was coring at 2,946 feet. Fortney Oil Co. No. 1 Warden, C W half SE SE section 8-3n-9e, was drilling at 2,090 feet. Southern Illinois Petroleum Co. No. 1 Allard, flowed 60 bbls. of oil in four hours at a total depth of 2,961 feet. It was then acidized with 1,500 gallons and flowed 72 bbls. of oil gross. It was re-acidized with 2,500 gallons and flowed 60 bbls. of oil in four and one-half hours. Arrangements were being made to put it on the pump.

OHIO

FINDLAY, Ohio, Oct. 25.—The report of completions for central and northeastern Ohio is as follows:

In Licking County, Hanover Township, section 2, the North Fork Oil Co. completed the No. 11 J. C. Williams in Berea sand for a 15-bbl. oil well the first 24 hours after shot. Berea was found from 654-65 feet. In the same county, Maryann Township, section 4, Settles Oil Co. completed No. 2 Phil Shannon in Berea, a 9-bbl. well the first 24 hours after shot. Berea was found from 752-60 feet.

In Knox County, Howard Township, Third Quarter, H. E. Perkins completed No. 1 Charles Simpson, a Clinton gas well, good for 450,000 feet per day. Clinton was found at 2,641-51 feet and 2,661-86 feet. In Union Township, same county, section 21, Upham Gas Co. completed No. 1 W. B. Harding, dry hole in the Clinton sand at 3,010-40 feet. In Butler Township, section 23, M. F. Whitehill completed No. 2 on his own tract, a dry hole in the Clinton sand at 2,932-83 feet, total depth 3,145 feet. In the same township, section 4, Millwood Sand Co. drilled a dry hole, No. 3 Raymond Lepley. Berea sand was at 585-600 feet.

In Ashland County, Lake Township, section 16, Robison Development Co. completed a dry hole in Berea sand on the Howard Young No. 7. Total depth was 670 feet.

In Medina County, Chatham Township, Tract 1, Grimm Oil Co. completed No. 8 B. E. Grimm to the Berea at 375-445 feet for a 4-bbl. oil well.

In Lorain County, Columbia Township, Lot 81, Ohio Fuel Gas Co. drilled a dry hole on the Nettie Ohmes farm. The Clinton was found at 2,626-30 feet, total depth 2,695 feet.

In Perry County, Coal Township, section 35, the Preston Oil Co. No. 160 on the Sunday Creek Coal Co. was a dry hole in the Clinton horizon at 3,549-75 feet.

In Hocking County, Ward Township, section 10, the Ohio Fuel Gas Co. completed its No. 154 on the Sunday Creek Coal Co. property, a gas well in Clinton sand, gauging 228,000 feet. Sand was found at 3,627-58 feet.

In Morgan County, Penn Township, Penn Contracting Co., in section 15, completed No. 4 Marian Beach in second Berea sand. It is a small gas well. Sand lay at 1,587-1,614 feet.

In Washington County, Liberty Township, section 19, Stewart and others completed No. 12 on the James Heslop Estate tract for a small gas well in the Germantown sand topped at 958 feet.

In Meigs County, Lebanon Township, section 25, Holmes and others completed No. 4 Elias Jividen to the Berea sand. It was dry. Sand was found at 2,087-88 feet, total depth 2,093 feet.

In Belmont County, Warren Township, section 9, the Barnesville Development Co. completed No. 2 L. P. Bailey, a gas well in the Injun sand, reported to have gauged 1,000,000 feet. However, it is making some water. In Union Township of the same county, section 35, the Stranges Oil Co. drilled No. 4 E. E. Brown through the Berea. It is a dry hole. The Berea was found at 1,582-1,615 feet.

EASTERN KENTUCKY

ASHLAND, Ky., Oct. 25.—Lee County, the only one in this section to report completions this week, is fully in the spotlight in the matter of production. C. E. Townsend, agent, who completed No. 10 on the Andrew Combs land on Billie's Fork last week at a total depth of 964 feet, has reported an increased flow. In the first 24 hours the well made 150 bbls. initially but is logged this week as a 250-bbl. per day producer.

Thomas Wittmer completed No. 4 on the J. C. White land on Billie's Fork at 668 feet, with an initial production of 5 bbls. R. T. Barbes completed No. 3 on the Alvin White farm nearby at 749 feet and it was good for 15 bbls. per day.

Oakes and Crabtree No. 3 on the Andrew Combs land was completed at 949 feet, good for 75 bbls. of oil daily. C. E. Townsend, agent, reports the completion of No. 11 on the Andrew Combs land, at a total depth of 936 feet, with an initial production of 20 bbls. South Penn Oil Co. No. 96 on Flahaven Land Co. land at Town Hollow was a dry hole.

Three wells are reported drilling in Lee County as follows: Petroleum Exploration at 580 feet in No. 8 on the J. D. Crabtree land on Billie's Fork; Thomas Wittmer at 360 feet in No. 4 on C. J. Tipton land nearby, and C. G. Mays at 410 feet in Medley S. Cole land on Little Sinking.

Operations in the other counties are as follows:

Floyd County

The Inland Gas Corp. is down 2,882 feet in white slate in No. 2 on E. A. Hammonds land on Right Fork of Troublesome Creek and has reached the 2,128-foot mark on R. C. Kilgore farm in same locality. The same firm was drilling at 1,280 feet in No. 1 on Mayo Craft land nearby. Inland Gas is rigging up No. 1 on Sexton land in same district.

The Kentucky-West Virginia Gas Co. was drilling at 350 feet in No. 557 on Ingram Stepp land on Johns Creek. The same firm is building rig for No. 558 on the John Layne farm at the mouth of Camp Branch of Levisa Fork, and is repairing engine at No. 559 John Dillon, on Dropping Lick Fork of Ivy Creek.

Inland Gas Corp. had reached the 2,321-foot level in brown shale in No. 1 on Ollie M. Glenns heirs land on Levisa Fork. Kentucky-West Virginia Gas Co. is rigging up No. 534 Jennie Caldwell farm, on Levisa Fork.

Martin County

Kentucky-West Virginia Gas Co. is down 1,390 feet, in sand, in No. 5,226, on C. W. Preece land, Coldwater Fork, and is idle at 5,230 feet on the same land. Same firm is down 180 feet, in slate, in No. 5,231, also on the Preece land.

Powell County

E. A. Wireman was drilling at 600 feet in No. 11 Kinser heirs on South Fork; Mrs. Agatha Wireman, drilling at 200 feet in No. 21 on J. M. Townsend nearby; Coleman Hall, drilling at 200 feet in No. 11 S. R. Rogers, in same district. No. 1 on the Matt Lawery land at Mount Springs is down 400 feet.

Magoffin County

The Bed Rock Petroleum Co. has moved a rig to the location for No. 13 on J. J. Prater on Prater Fork of Mash Fork. C. J. Sipple & Co. is rigged up and waiting for water at No. 7 William Salyer, on Birch Branch. A. O. & R. Co. is still shut down at No. 12 B. F. Whitt No. 1 at Rockhouse, although an engine has been brought to the well. A. V. Hoenig is at the 600-foot level in No. 12 Paris Long on Litteral Branch.

Lawrence County

McKinster Brothers are down 1,350 feet in No. 1 on Mrs. E. C. McKinster in Busseyville-Fallsburg district. Kentucky Oil Producers is down 727 feet in No. 1 John Rose, on Keaton with drilling continuing in second Weir sand.

WESTERN KENTUCKY

OWENSBORO, Ky., Oct. 25.—The South Penn Oil Co. completed a well good for an estimated 10 bbls. an hour from Jett sand in the Hewletts store district in Daviess County, which was the best well of the week, during which time four oil wells, two gas wells and six dry holes were finished in western Kentucky counties. Eight new operations were reported.

Following is a summary of the field work reported:

Ohio County

Olaton district: Cox, Lang and others No. 2 Mrs. Abbie Calloway, dry hole, 400 feet; No. 1 Ida Smith, moving in.

Lyonia district: J. C. Miller No. 3 Bowles farm, dry hole, 712 feet.

Reynolds district: Moss Oil Co. No. 3 W. H. Lyons, 203,000 feet of gas, 54 pounds rock pressure, Stray sand 248-255 feet.

Adaburg district: Leeper Oil Co. No. 9 L. C. McKinley, 10 bbls., Jett sand, 741-754 feet, total depth 762 feet; No. 2 Flem Douthitt, moving in.

Friendship Church district: A. Teller and others No. 7 A. H. Medcalf, moving in.

Heflin district: Kentucky Natural Gas Co. No. 5 Smith & Cox, dry hole through Bethel sand, total depth 1,370 feet. W. W. Damron No. 2 J. F. Smith, drilling 400 feet.

Livermore district: O. Jenkins and others No. 3 W. L. Tichenor, dry hole to second break in Mississippi lime, total depth 1,585 feet.

Hancock County

Easton district: J. C. Ellis No. 12 Odie Richards, 50 bbls., Jett sand, 288-322 feet, total depth 323 feet, shot with 200 quarts.

Pellville district: Jay Petroleum Co. No. 3 William McIntosh, drilled deeper through Bethel sand, total depth 657 feet, plugged.

Floral district: F. Damron and others No. 2 Homer Rice, 330,000 feet of gas, 179 pounds rock pressure, Jackson sand, 510-525 feet.

Daviess County

Haynes district: A. H. Stewart and others No. 1 W. M. Holland, 10,000 feet of gas, Jones sand, 612-615 feet, total depth 619 feet, plugged.

Hewletts store district: Gibson & Anknay No. 3 Kate Shiveley, Jackson sand 948-87 feet, shot 70 quarts, Barlow sand 1,021-42 feet, shot 60 quarts, total depth 1,045 feet, estimated 50 bbls. a day; No. 4 Arlie E. Bryant, moving in.

McLean County

Livermore district: Mathews & Preston No. 3 Hollis Howell, moving in.

Island district: South-Penn Oil Co. No. 1 Alma Nail, estimated 10 bbls. per hour, Jett sand, 1,434-60 feet. Marhill Oil & Gas Co. No. 1 Everett Wood, rigging up.

Webster County

Sebree district: I. B. Browning and others No. 6 J. R. Ramsey, Corniferous test, spudding in. Powell & Garrison No. 3 Rip Roberts, spudding in.

West Texas Fields

(Continued from Page 148)

feet, oil sand 3,060-80 feet, total depth, initial production 106 bbls. per day and 8,000,000 feet gas.

Jones County

R. B. Farris and Ungren & Frazier No. 1 Nolan, total depth 1,558 feet, junked and abandoned. Danciger Oil & Refining Co. No. 9 Guitar, sandy lime 1,985-98 feet, initial production 465 bbls. in 22 hours. Kleiner & Brown Eagle Oil Co. No. 2 Bert Fields, total depth 2,235 feet, dry and abandoned. Lewis Production Co. No. 7 Sayles, sandy lime 1,965-85 feet, initial production 20 bbls. per day.

Shackelford County

Pardue and others No. 1 Davis, oil sand 1,611-14 feet, total depth 1,620 feet, initial production 20 bbls. per day.

N. Y.-Penna. Gas Fields

(Continued from Page 132)

down at 3,013 feet on the C. Groves farm. Hanley & Bird is drilling at 1,600 feet on the J. Lobeck farm. J. Becker is drilling at 590 feet on the Fred Sly farm. Cunningham Natural Gas Co. is drilling at 1,830 feet on the J. J. Johnson farm. Southwestern Development Co. has rig up on the E. G. Husted farm. Belmont Quadrangle Drilling Co. is moving in material on the John Allen farm.

In New York state drilling outside the Woodhull field, New York State Natural Gas Co. is drilling at 1,400 feet on the A. Schaul farm, Troupsburg Township, Steuben County, and Southwestern Development Co. is shut down at 5,454 feet on the Federal Land Bank farm, Montour Township, Schuyler County. This test, a deepened abandoned hole, has reached the Medina formations, topping the Red Medina at 5,298 feet.

Two wells are also drilling in Allegany County where Southwestern Development Co. has a location on the Johnson Estate farm, Willing Township. G. L. Cabot, Inc., is running casing in a hole on the Thomas Murphy farm, Alma Township, drilled to 4,708 feet, and Fairman and others are shut down at 4,730 feet on the C. Wilson farm, Willing Township. The Cabot well topped the Onondaga limestone at 4,696 feet.

Michigan Field Report

By O. C. PRESSPRICH

ACID TREATMENT INCREASES OUTPUT OF BUCKEYE WELLS

SAGINAW, Mich., Oct. 25.—Buckeye field operators centered their attention on acid treatment of recent completions, especially of edge test wells, and there were comparatively few new completions in the past week. Eastward extension of the north (Wicklund) pool continued a highlight, with favorable commercial producers rewarding acid treatment. Four wells in section 12, which borders Hay Township, were outstanding, two being classed as high producers after acid treatment.

Topping the list was Charles W. Teater No. 2 Adamets, NW SW SW section 12, which developed a production of 1,175 bbls. daily after acid. The well strengthened the belief of heavier production lying to the east of the north pool. In respect to the discovery well in the pool it is four locations east and one north.

The American Drilling Co. acidized its No. 2 Soldan, NW NW SE section 12, with a resulting production of 800 bbls. daily for the second best well of the week in the eastern field extension. It is farther east than the Teater-Adamets well, and slightly north.

Ralph LaBlanc No. 1 Campbell in the SW SE NE section 12, located less than a quarter-mile from the Hay Township boundary in Buckeye and the most easterly well of the lot showed 200 bbls. daily production after acid. Socony-Vacuum Oil Co. No. 5 Dailey, in the SW SW NE section 12, rated 125 bbls. natural recently, but on being deepened ran into water, and was being plugged back this week preparatory to acidizing at a higher level. Completion was scheduled momentarily for T. F. Caldwell No. 3-E Emmott in the NE SE SE section 12, with a hole full of oil showing during the deepening process.

As most of the extensions centered to the east of the north pool with favorable results, a west extension, nine locations west of the Wicklund discovery well, was reported at Sun Oil Co. No. 6 Ockerman, in the SW NE SW section 10. The well was reported at 50 bbls. naturally, and plans were being made to acidize.

Up in the northwest corner of the north pool Mammoth Producing & Refining Co. No. 4 Manyet, in the NE NE SW section 3, was acidized with a resulting production of 150 bbls. daily. It is a northwesterly extension of the field that has been watched closely by operators.

South (Oard) Pool

Development lagged in the south (Oard) pool of Buckeye the past week, but with operators preparing to bring in several wells early next month. Schilling & Schrott No. 3 Nash, in the SW NW SE section 35, made 100 bbls. production, and Gordon Oil Co. No. 3-C state, in the NE NW NE section 36, was to be brought in this week. An extension of the Midway pool, now definitely a part of the south pool, to the eastward was recorded with a favorable show of oil at Pence & King No. 1 Stahl, in the SW SE SW section 24. The test was nearing the top of the Dundee with all indications favorable. If successful the well will be the first eastern development of the midway pool in several weeks.

While this effort made ready, W. H. Thouriby No. 1 Phillips, in the NW NE NW section 25, a southern offset of Pence & King's well, developed last Friday with a 200-bbl. natural production. It is the first well in the northern quarter tier of section 25, and indicated a favorable eastward extension of the so-called midway field.

Gladwin County—Billings Township

As south pool development in Buckeye marked time, operators focused on prospective developments in Billings Township, adjoining section 36 of Buckeye to the southeast, where McClanahan Oil Co. No. 1 Havens, in the SE NE NE section 9, neared the Dundee formation. The well would prove a southeasterly trend from southern Buckeye, and an eastern extension of the Tobacco Township field lying directly south of section 36 of Buckeye.

Saginaw County—Lakefield Township

Doran & Hilliard No. 1 Dobschersky, in the NW NW SE section 33, looked upon as a prospective new field in Saginaw County by some operators, was reported to be shut down on top of the Dundee, while operators worked to untangle a casing job. This wildcat test is the first one of importance in this section in several months.

Midland County

Two major tests were completed this past week in the Porter-Jasper field. In the Jasper field Pure Oil Co. acidized its 11-C Bond, in the C N half SE NE section 12, and was testing for final completion. In Porter, Frank Summer, Trustee, is completing his No. 1 Rayner, in the SW SW NW section 18, a northwestern edge test. The well was scheduled for acid.

Montcalm County—Crystal-Ferris

A commercial showing by Jetter Drilling Co. No. 1 Loucks, in the NW SE SW section 12, Crystal Township, in the Dundee limestone resulted in plans to acidize. In the southern area, however, of Ferris Township, Arthur Morris No. 1 Stearn, in the SW SW NE section 26, was ordered plugged and abandoned. Dundee water-flooded the hole after the very thin layer of limestone was pierced.

Montcalm County—Winfield Township

Surrounded by previous failures, which have marked other attempts to locate the pay stratum from which the Daily-Weatherby discovery well derives its flow, operators are nevertheless interested in the progress of Rex Oil & Gas Co. No. 1 Weatherby, in the NW NW NE section 28, Winfield Township. The Rex-Weatherby well is nearly a mile from the discovery well and surrounded practically by nonproducers. The Daily-Weatherby well was brought in a year ago.

Several wildcats are registered on the state conservation department's weekly list of permits for the drilling of oil and gas wells, one in Laketown Township of Allegan County, adjacent to the Salem field; one in Grant Township of Huron County; one in Haring Township of Wexford County.

The week's list carried 16 permits, with Gladwin County, scene of the extensive Buckeye field development, taking exactly half of them and Allegan County four, leaving one each for Arenac, Isabella, Huron and Wexford. Except for one in Hay Township, looked upon as a possible eventual rival of the prolific Buckeye, all of Gladwin County's eight permits are for wells either inside the proved areas or on the borders of the Buckeye pools.

Gladwin County—Beaverton Township

A boundary marker was established last week by the failure of Frank T. Schooneas No. 2 Yager, in the NE NE NE section 36. Although the well is a diagonal offset of the No. 1 Yager, a producer, it failed to enter commercial production, and was ordered plugged and abandoned.

Gladwin County—Hay Township

Hay Township, center of the previous week's interest, with two favorable wells indicating an eastward trend of pay stratum from the north (Wicklund) Buckeye pool, marked time last week, although three new rigs reared skyward near the scene of previous strikes, indicating further probing of a possible new pool. The new locations indicated a south and southeast trend from last week's topper, F. C. Stover No. 1 Knight, in the SE NW SW section 16, which recorded a 1,000-bbl. producer after acid. The second well, Petroleum Investors No. 1 Knight, in the NW SW SW section 16, which came in at 150 bbls. naturally, was listed for acid treatment this week.

A New Oil Firm

The firms of Goll, Graves & Mechling of Saginaw and C. L. McGuire, Inc., of Mount Pleasant, have formed a new company known as the Bentley Oil Co. to prospect for oil and gas in the new Bentley Township field in Gladwin County. The two companies will continue to conduct individual operations in other fields, and no other interests were merged. Permission was granted recently by the corporation and securities commission to form the new company, incorporated on a basis of 20,000 shares of no-par stock. Jesse A. Findlay is trustee of the new company.

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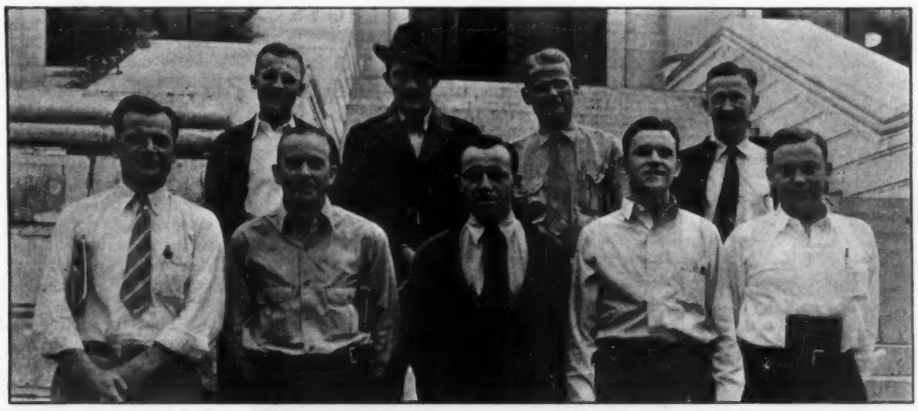
Western Kansas Scouts at Great Bend Headquarters



J. C. Julian, (czar), Continental; Rex Staplin, Cities Service; M. F. Pryor, Darby; James Foraker, Skelly; P. M. Broach, Stanolind. Back row: Dan Cameron, Carter; Charles Dugger, Gulf; Ben Brooks, Shell; A. E. Palmer, Shell

Canadian Fields

Completions and Operations in Northwest and in Ontario

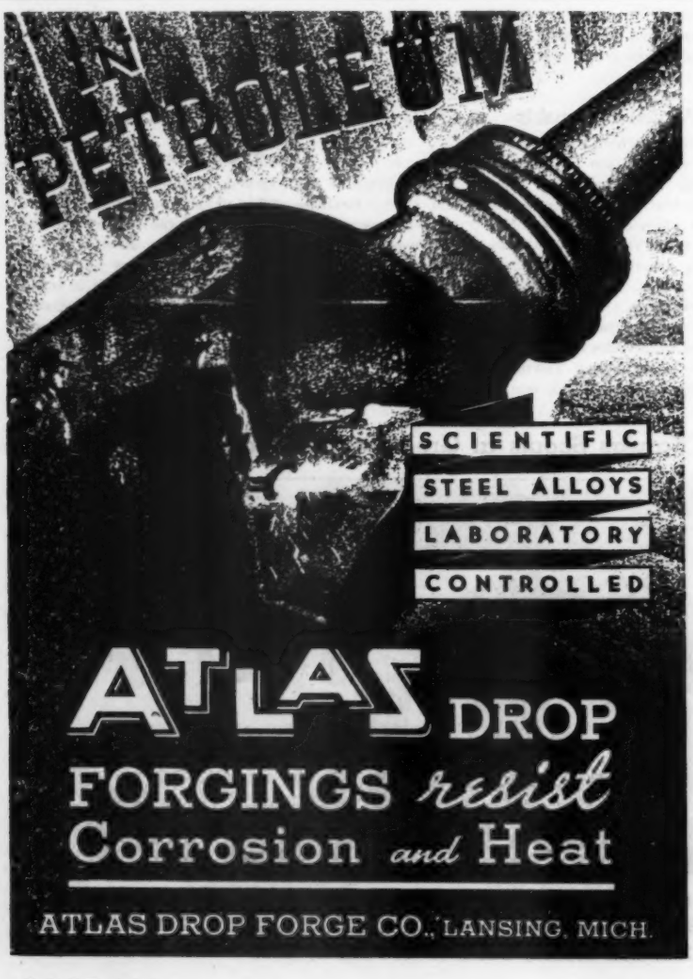
By VICTOR LAURISTON

CHATHAM, Ontario, Oct. 23.—Deliveries to the Calgary refineries from the Turner Valley field in September totaled 234,941 bbls. compared with 232,557 bbls. in August. New producers were partially offset by continued decline of naphtha wells and the introduction of proration for crude wells. Of the September production, Imperial Oil, Ltd., took 38,667 bbls. of naphtha and 141,167 bbls. of crude. Deliveries to British American Oil Co. included 52,111 bbls. of crude and 2,996 bbls. of naphtha. August deliveries totaled 161,161 bbls. to Imperial Oil and 71,396 bbls. to the British American. Total refinery deliveries from the field up to the end of September were 1,473,124 bbls. compared with 760,596 bbls. in the same period of 1936.

New Crude Producers

On the west flank of South Turner Valley, Model-Spooner-Reward No. 1, LSD 4, section 28-18-2w5, bottoming in the Madison limestone at 6,930 feet, started flowing by heads and making 350 to 400 bbls. a day, with around 3,000,000 feet of gas. It was finished in the lime with 6⅝-inch hole. The 2½-inch tubing was run and the well treated with 10,000 gallons of acid. Following acidization, it blew in with flush production estimated 2,500 bbls., later settling to around 1,536 bbls. a day. This will be prorated 65 per cent. Location is in line with early crude producers, being a half mile due south of Turner Valley Royalties No. 1 and a quarter mile north of Davies-Royalite No. 2. Model Oils, Spooner Oils and Reward Oils are jointly interested.

Among recent completions, Davies Royalite No. 2, LSD 13, section 21-18-2w5, made 37,505 bbls. from September 7 to 30. It was prorated 65 per cent on September 12 after developing over 2,500 bbls. a day natural production, and averaged around 1,400 bbls. the first week in October. Brown Oil Corp. No. 1, LSD 14, section 16-18-2w5, and Brown No. 2, LSD 8, section 20-18-2w5, are running 300 to 350 bbls. a day natural flow and gas pressure has increased from between 200 and 300 to around 1,100 pounds.



Granville Oils No. 1, LSD 16, section 29-18-2w5, a quarter mile west of Turner Valley Royalties No. 1, finished 464 feet in the Madison limestone, bottoming at 7,321 feet, and has been flowing by heads, varying from 30 minutes to three hours, with production between 300 and 600 bbls. per day. It will be acidized.

Share Royalties No. 1, N half LSD 8, section 29-18-2w5, bottoming at 7,309 feet, some 380 feet in the Madison, has run tubing and acidized. Flush production was estimated 1,500 bbls., which settled to approximately 720 bbls.

In the West-Central area, Mercury Oils No. 8, LSD 3, section 4-19-2w5, has only about 1,000,000 feet of wet gas and is clearing itself of drilling fluid very slowly. It looks like a small naphtha well, and will likely be acidized.

In section 28-18-2w5, Four State Petroleum No. 1, LSD 13, offsetting Turner Valley Royalties No. 1, same LSD, discontinued drilling 460 feet in the Madison at 7,104 feet. Location is south of Royalite No. 4 Sterling and north of Turner Valley Royalties No. 1, both large wells. Brown Oil Corp. and United Oils each hold a 15 per cent interest.

Tests in the Lime

On the west flank, Royalite Oil Co. No. 6 Sterling Pacific, LSD 5, section 33-18-2w5, got Madison limestone at 6,683 feet and cemented casing at 6,706 feet. Royal Crest Petroleums No. 1, LSD 9, section 32-18-2w5, is below 6,890 feet, getting the Madison at 6,648 feet. In section 28-18-2w5, Three Point Petroleums No. 1, LSD 12, is below 6,645 feet after getting Madison limestone at 6,562 feet. In section 29-18-2w5, Commoil No. 1, LSD 15, is below 7,200 feet and is expected to go to 7,450 feet, or about 450 feet in the Madison, to get production. National Petroleum Corp. No. 1, S half LSD 8, same section, is below 6,822 feet. In the southwest extension, Prairie Royalties No. 1, LSD 16, section 17-18-2w5, is below 7,147 feet, more than 317 feet in the Madison.

West Side Drilling

In the West Central area, Brown Oil Corp. No. 3, LSD 15, section 19-19-2w5, is below 5,323 feet. It got the grit beds at 4,820 feet, about 30 feet lower than Turner Valley Royalties No. 1.

In section 21-18-2w5, two tests are starting. Bersac Royalties No. 1, LSD 12, offsetting Davies-Royalite No. 2 to the south, has derrick up. Brown Oil Corp. No. 4, LSD 4, is finishing derrick.

In the far south end of the field, tentative location has been made for Davies Petroleums No. 3.

East Side Drilling

On the Calling Valley structure east of Turner Valley, Sentinel Oil Co. No. 1, LSD 1, section 8-20-2w5, is making new hole below 5,870 feet. This well, shut down for several years, will test a structure parallel to Turner Valley but somewhat deeper. Jim Rowan and Angus McLeod are handling the drilling.

On the New Valley structure, McLeod Oil Co. No. 1, LSD 4, section 6-21-2w5, is shut down at 8,462 feet. This is the deepest hole in Alberta drilled entirely with cable tools. It got a strong show of crude in the cardium sand, but without gas to flow the oil; and further shows of green crude between 7,725 and 8,275 feet.

Test for Brazeau Structure

On the Brazeau structure, west of Red Deer, Home Oil Co. of Vancouver, British Columbia is moving drilling equipment to a location 28 miles from Nordegg. It is a wildcat, in an isolated area, and preliminary work included the construction of 28 miles of road. The Home company is developing 50,000 acres taken up last year under a prospecting permit by a Medicine Hat syndicate in which Calmont Oils, Ltd., has an interest. Home No. 1 Brazeau is expected to spud about the middle of November.

Tests in the Foothills

In the Forest Reserve area west of Olds, Hunter Valley Oil Co. No. 1 McLaren, LSD 12, section 13-31-10w5, is waiting for favorable road conditions to move in equipment for testing production. The hole was drilled with rotary equipment to 8,274 feet and has apparently not reached the Madison limestone, though encouraging shows of oil and gas have been encountered in the lower horizons. The company is planning to drill a second test on the same structure.

On the Moose dome, Moose Oils No. 2, LSD 8, section 29-22-6w5, is standing at 1,553 feet with all available storage filled with crude which cannot be moved out owing to bad roads. The pumping test will be resumed as soon as storage is available. On the west side of the same structure, Model Oils No. 1 Moose, LSD 16, section 30-22-6w5, is working on derrick.

On the Birch Ridge structure, Elbow Oils No. 1, LSD 11, section 35-22-5w5, has resumed from 5,202 feet with casing following the tools as a precaution against caving. It has a heavy gas flow.

On the Highwood-Sinclair structure south of Turner Valley, Green Valley Oils No. 1 Banner, LSD 6, section 34-17-3w5, is below 3,790 feet after encountering a strong show of 39.7-gravity crude at 3,730 feet. The oil is apparently coming from the Home sand and is a dark green crude.

Lethbridge Structure

On the Lethbridge structure, southern Alberta, Lethbridge Petroleums & Refining No. 1, LSD 12, section 11-8-22w4, is standing at 2,311 feet with 13-inch casing cemented, and hauling 10-inch casing.

Contract is being arranged with P. J. H. Van Oudenol of Amsterdam, Holland, for the drilling by Dutch interests of a series of 12 wells on 2,800 acres adjoining Lethbridge No. 1, within a period of two years following completion of the latter as a commercial well. The acreage was held originally by Benton Oils, Ltd., and carries 7½ per cent royalty each to the Benton and Lethbridge companies.

Taber Field

In the Taber field, southern Alberta, Plains Petroleum Corp. No. 2, LSD 11, section 25-9-17w4, bottoming at 3,226 feet, has run tubing for a production test. The well encountered production in the

(Continued on Page 163)

"Shorty" Newell, of Newell & Chandler, drilling contractors, Calgary, Alta., and "Russ" Wilson, of the National Supply Co., Calgary, in Turner Valley field

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Hancock-Bush, No. 1-W Santa Maria, Santa Barbara	25-10-34	3,134	sd. sh. drlg.
Macrate, A. N., No. 2-R Santa Maria, Santa Barbara	23-10-34	1,791	sd. sh. drlg.
Pet. Prop., Inc., No. 1-R Santa Maria, Santa Barbara	19-10-33	1,997	sd. sh. drlg.
Sed Oil, No. 1 Mills, Santa Maria, Santa Barbara Co.	27-10-34	4,426	pump. 195 b.d.
Linnell Oil, No. 1 Santa Maria, Santa Barbara Co.	23-10-34	1,850	sd. sh. drlg.
Moore, E. H., No. 2 Sugar, Santa Maria, Santa Barbara	19-10-34	5,103	show oil
Ohio Oil, No. 2-M Santa Maria, Santa Barbara Co.	21-10-34	4,081	sd. sh. drlg.
Union Oil, No. 2 Vincent, Santa Maria, Santa Barbara	30-10-33	4,054	sd. sh. drlg.
Union Oil, No. 4 Vincent, Santa Maria, Santa Barbara	30-10-33	4,362	sd. sh. drlg.
Union Oil, No. 2 LeRoy, Santa Maria, Santa Barbara	24-10-35	5,334	sd. sh. drlg.
Union Oil, No. 17 Cal. Coast, Orcutt, Santa Barbara	27- 9-34	2,253	sd. sh. drlg.
O'Donnell, J. E., No. 1 Santa Maria, Santa Barbara	21-10-34	3,690	sd. sh. drlg.
Pac. Western Oil, No. 3 Santa Maria, Santa Barbara	21-10-34	2,960	sd. sh. drlg.
Pac. Western Oil, No. 1 Santa Maria, Santa Barbara	27-10-34	4,450	sd. sh. drlg.
Rice Ranch Oil, No. 4 Orcutt, Santa Barbara Co.	23- 9-34	4,330	P.B. 3,732
101 Oil, No. 1 Pt. Concepcion, Santa Barbara Co.	35- 5-33	3,206	flow. gas
Tide Water A. O., No. 1-L Santa Rita, Santa Barbara	3- 6-33	4,450	hd. sd. drlg.
Arnold Oil, No. 2 Careaga, Santa Barbara Co.	8- 8-33	6,373	bailing
Field, O. C., No. 1-S.R., Lompoc, Santa Barbara Co.	11- 7-33	3,358	C.P. 2,012
Pet. Securities, No. 6 Ranch, Shiells, Ventura Co.	3- 3-19	4,390	sd. sh. drlg.
Texas Co., No. 133 Shiells, Ventura Co.	4- 3-19	4,128	flow. 164 b.d.
Texas Co., No. 134 Shiells, Ventura Co.	4- 3-19	3,119	cmtd. 3,112
Union Oil, No. 16 Bardsdale, Ventura Co.	12- 3-20	6,804	pump. 164 b.d.
Richfield Oil, No. 1 McFarland, Camarillo, Ventura	13- 2-21	4,643	dry; abd.
Condor Oil, No. 1 Sespe, Ventura Co.	6- 4-19	2,193	cleaning out
Ivers, H. A., No. 14 Star, Sespe, Ventura Co.	1- 4-20	1,502	cleaning out
Williamson Oil, No. 1 Sespe, Ventura Co.	1- 4-20	410	sd. sh. drlg.
Section 20 Oil, No. 1 Sespe, Ventura Co.	20- 5-19	430	hd. sh. drlg.
Speik Oil, No. 2 Sespe, Ventura Co.	33- 5-19	3,270	sd. sh. drlg.
Colima Oil, No. 2 Sespe, Ventura Co.	25- 5-19	3,500	hd. sh. drlg.
Topa Topa Oil, No. 3 Sespe, Ventura Co.	33- 5-19	4,410	sd. sh. drlg.
Commander Oil, No. 7-F Piru, Ventura Co.	13- 4-19	286	sd. sh. drlg.
Skyline Oil, No. 1-H Hopper Canyon, Ventura Co.	13- 4-18	1,565	sd. sh. drlg.
Val. Giovani, No. 1 Ojai, Ventura Co.	4- 4-21	1,864	hd. sh. drlg.
Continental Oil, No. 8 Grubb, San Miguelito, Ventura	30- 3-23	3,360	sd. sh. drlg.
C. C. M. Oil, No. 2 Padre Canyon, Ventura Co.	23- 3-24	7,480	fish. D.P.
Continental Oil, No. 4 Padre Canyon, Ventura Co.	15- 3-24	5,720	sd. sh. drlg.
C. C. M. Oil, No. 16 Rincon, Ventura Co.	8- 3-24	4,650	sd. sh. drlg.
C. C. M. Oil, No. 17 Rincon, Ventura Co.	17- 3-24	3,767	O.S. drlg.
Oxnard Oil, No. 1 Oxnard, Ventura Co.	10- 1-22	6,302	P.B. 6,200
Vaca Oil, No. 2 Oxnard, Ventura Co.	6- 1-21	4,285	cleaning out
Tide Water A. O., No. 28 V.L.W., Ventura, Ventura	26- 3-23	7,138	flow. 287 b.d.
Tide Water A. O., No. 32 V.L.W., Ventura, Ventura	24- 3-23	1,944	sd. sh. drlg.
Tide Water A. O., No. 30 Lloyd, Ventura, Ventura	27- 3-23	5,945	sd. sh. drlg.
Tide Water A. O., No. 63 Lloyd, Ventura, Ventura	27- 3-23	3,760	sd. sh. drlg.
Tide Water A. O., No. 137 Lloyd, Ventura, Ventura	27- 3-23	10,060	flow. 160 b.d.
Tide Water A. O., No. 138 Lloyd, Ventura, Ventura	23- 3-23	2,733	sd. sh. drlg.
Tide Water A. O., No. 18 Hartman, Ventura, Ventura	22- 3-23	7,541	hd. sh. drlg.
Tide Water A. O., No. 27 Hartman, Ventura, Ventura	22- 3-23	6,095	deepening
Shell Oil, No. 90 Taylor, Ventura, Ventura Co.	30- 3-23	7,351	O.S. drlg.
General Pet., No. 17 Barnard, Ventura, Ventura Co.	23- 3-23	8,350	flow. 1,661 b.d.
General Pet., No. 13 Notten, Ventura, Ventura Co.	28- 3-23	8,261	O.S. drlg.
Texas Co., No. 2-27 Theta, Lost Hills, Kern Co.	2-26-20	1,134	O.S. drlg.
Standard Oil, No. 5 United, Lost Hills, Kern Co.	2-26-20	1,167	pump. 275 b.d.
Standard Oil, No. 6 United, Lost Hills, Kern Co.	2-26-20	1,505	sd. sh. drlg.
Amerada Pet., No. 5 Beer, Devils Den, Kern Co.	22-26-19	962	sd. sh. drlg.
Goforth & Bradfield, No. 1 McKittrick, Kern Co.	18-30-22	461	sd. sh. drlg.
Par-Mer Oil, No. 1 McKittrick, Kern Co.	6-31-22	826	sd. sh. drlg.
Michels, George, No. 1 Ynez, Temblor, Kern Co.	36-29-20	1,610	P.B. 435
Standard Oil, No. 2 Randolph, Semi-Tropic, Kern Co.	14-27-23	5,100	sd. sh. drlg.
Continental Oil, No. 2 Wasco, Kern Co.	8-27-24	11,435	hd. sh. drlg.
Seeco, No. 1 Armstrong, McFarland, Kern Co.	9-26-28	951	sd. sh. drlg.
Belridge Oil, No. 43-26 North Belridge, Kern Co.	26-27-20	7,791	br. sh. drlg.
Belridge Oil, No. 53-26 North Belridge, Kern Co.	26-27-20	8,052	br. sh. drlg.
Belridge Oil, No. 27-8 North Belridge, Kern Co.	27-27-20	3,731	will deepen
Tide Water A. O., No. 7 North Belridge, Kern Co.	34-27-20	3,074	sd. sh. drlg.
Tide Water A. O., No. 1-21 North Belridge, Kern Co.	21-27-20	1,986	sd. sh. drlg.
Texas Co., No. 1 Martin, North Belridge, Kern Co.	22-27-20	8,446	flow. 1,950 b.d.
General Pet., No. 1 St. Helens, Belridge, Kern Co.	12-28-20	1,997	sd. sh. drlg.
Honolulu Oil, No. 23 Round Mountain, Kern Co.	20-28-29	1,904	pump 278 b.d.
Honolulu Oil, No. 75 Round Mountain, Kern Co.	18-28-29	1,875	O.S. drlg.
Link Trucking, No. 1 Round Mountain, Kern Co.	30-28-29	1,695	idle
Cal-Western Oil, No. 6 C.C., Round Mountain, Kern	12-28-28	1,778	O.S. drlg.
Malone, F. H., No. 3 Mabry, Kern Front, Kern Co.	4-28-27	2,290	cleaning out
Martin, J., No. 2 Kern Front, Kern Co	17-28-27	2,917	idle
California Star Oil, No. 3-80 Kern Front, Kern Co.	22-28-27	2,755	pump. water
Texas Co., No. 11 Lehman, Kern Front, Kern Co.	23-28-27	1,891	sd. sh. drlg.
Republic Pet., No. 3 Cal. Tech., Kern Front, Kern Co.	24-28-27	1,868	pump. 230 b.d.
Republic Pet., No. 14-S, Kern Front, Kern Co.	24-28-27	1,671	sd. sh. drlg.
Fuhrman, A., No. 12 Kern River, Kern Co.	28-28-28	480	sd. sh. drlg.
Vedder, D. G., No. 2 B. N. B., Mount Poso, Kern Co.	32-26-28	1,703	pump. 371 b.d.
Vedder, D. G., No. 3 B.N.B., Mount Poso, Kern Co.	32-26-28	1,531	sd. sh. drlg.
Ring Oil, No. 2 Shapiro, Mount Poso, Kern Co.	32-26-28	1,725	pump. 360 b.d.
Ring Oil, No. 29-4 Bowles, Mount Poso, Kern Co.	29-26-28	1,744	pump. 358 b.d.
Sunset Oil, No. 4 Vedder, Mount Poso, Kern Co.	28-26-28	1,510	pump. 75 b.d.
Sunset Oil, No. 5 Vedder, Mount Poso, Kern Co.	28-26-28	1,545	O.S. drlg.
Vedder Pet., No. 29-2 Lambert, Mount Poso, Kern Co.	29-26-28	1,807	will P.B.
Bargol Oil, No. 3 Newhope, Mount Poso, Kern Co.	11-27-27	1,184	cleaning out
Framac Oil, No. 1 Brown, Mount Poso, Kern Co.	22-27-27	1,351	fish. D.P.
Desert Glow Oil, No. 2 Mount Poso, Kern Co.	14-27-27	1,232	bailing
Baker, H. W., No. 2 Mount Poso, Kern Co.	28-27-27	2,012	cleaning out
Union Oil, No. 2-B Tribe, Mount Poso, Kern Co.	28-27-28	1,939	pump. 100 b.d.
Vanguard Oil, No. 9 Baker, Mount Poso, Kern Co.	33-27-28	1,712	bailing
Meridian Oil, No. 6 Turner, Fruitvale, Kern Co.	23-29-27	3,075	pump. 182 b.d.
Simmel, L. C., No. 2 Fruitvale, Kern Co.	23-29-27	3,743	O.S. drlg.
Western Gulf Oil, No. 9 Red Ribbon, Fruitvale, Kern	27-29-27	3,525	flow. 504 b.d.
Western Gulf Oil, No. 28 K.C.L., Fruitvale, Kern Co.	14-29-27	3,058	O.S. drlg.
Sandy Oil, No. 2 Fruitvale, Kern Co.	26-29-27	3,497	P.B. 3,440
Section Six Oil, No. 1 Mountain View, Kern Co.	6-31-29	6,020	gr. sd. drlg.
Mohawk Pet., No. 4 Fruit, Mountain View, Kern Co.	4-31-29	5,451	flow. 394 b.d.
Ohio Oil, No. 6 Derby, Mountain View, Kern Co.	33-30-29	5,292	O.S. drlg.
Vesta Oil, No. 12 Mountain View, Kern Co.	19-30-29	1,994	sd. sh. drlg.
Hogan Pet., No. 5 Symons, Mountain View, Kern Co.	4-31-29	5,350	sd. sh. drlg.
Hogan Pet., No. 4 Bankline, Mountain View, Kern Co.	4-31-29	4,876	sd. sh. drlg.
Hogan Pet., No. 9 Wharton, Mountain View, Kern Co.	32-30-29	6,132	dry; abd.
North American Consd., No. 2-T Mountain View, Kern	9-31-29	3,641	sd. sh. drlg.
Petrol Prod., No. 1 Fruit, Mountain View, Kern Co.	4-31-29	5,720	sd. sh. drlg.
Monterey Expl., No. 2 Nichols, Edison, Kern Co.	14-30-29	1,806	pump. 270 b.d.
Westbrook Oil, No. 1 Edison, Kern Co.	4-30-29	1,775	O.S. drlg.
Wood-Callahan Oil, No. 1 Harvey, Edison, Kern Co.	21-30-29	4,450	O.S. drlg.
General Pet., No. 1 Houchin, Arvin, Kern Co.	27-31-29	7,354	O.S. drlg.
Arkelo Oil, No. 1 Lerdo, Kern Co.	23-28-26	10,050	fish. D.P.
Union Oil, No. 1-34 Rio Bravo, Kern Co.	34-28-25	11,302	sd. sh. drlg.
Continental Oil, No. 1 Rosedale, Kern Co.	12-29-26	10,210	fish. D.P.
Superior Oil, No. 9 KCL, Greeley, Kern Co.	3-30-26	7,870	flow. 852 b.d.
Standard Oil, No. 11-8 KCL, Greeley, Kern Co.	18-29-26	7,426	redrlg. 7,076
Standard Oil, No. 11-9 KCL, Greeley, Kern Co.	20-29-26	7,447	sd. sh. drlg.
Standard Oil, No. 11-10 KCL, Greeley, Kern Co.	17-29-26	7,250	sd. sh. drlg.
Standard Oil, No. 12-2 KCL, Greeley, Kern Co.	16-29-26	7,711	P.B. 7,640
Standard Oil, No. 1-F Greeley, Kern Co.	20-29-26	7,540	sd. sh. drlg.
Shell Oil, No. 8-28-A KCL, Ten Section, Kern Co.	28-30-26	7,740	sd. sh. drlg.
Shell Oil, No. 61-31-B KCL, Ten Section, Kern Co.	30-30-26	8,241	flow. 2,656 b.d.
Ohio Oil, No. 3-E, KCL, Ten Section, Kern Co.	14-30-25	7,897	br. sh. drlg.
Standard Oil, No. 1 Magunden, Kern Co.	2-30-28	3,750	sd. sh. drlg.
Merrit Annex Oil, No. 6 Midway-Sunset, Kern Co.	25-12-24	2,825	pump. 248 b.d.
C. C. M. Oil, No. 44-21 Midway-Sunset, Kern Co.	21-32-23	1,974	sd. sh. drlg.
C. C. M. Oil, No. 45-21 Midway-Sunset, Kern Co.	21-32-23	2,404	rig to pump.
C. C. M. Oil, No. 1-U.S., Midway-Sunset, Kern Co.	30-32-24	2,985	P.B. 2,520
Hallmark Oil, No. 8 Midway-Sunset, Kern Co.	25-12-24	2,648	O.S. drlg.
Brookshire Oil, No. 3 Midway-Sunset, Kern Co.	24-31-22	1,876	sd. sh. drlg.
Hoyt, Otis, No. 7 Midway-Sunset, Kern Co.	7-11-23	1,491	sd. sh. drlg.
Richfield Oil, No. 14 Fellows, Midway-Sunset, Kern	6-32-23	1,033	sd. sh. drlg.
Wreden Pet., No. 1 Midway-Sunset, Kern Co.	12-11-24	1,706	br. sh. drlg.
Standard Oil, No. 19 Monarch, Midway-Sunset, Kern	26-12-24	780	sd. sh. drlg.
Standard Oil, No. 3-13-D Midway-Sunset, Kern Co.	13-32-24	3,590	flow. 816 b.d.
Standard Oil, No. 2-25-L Midway-Sunset, Kern Co.	25-12-24	963	sd. sh. drlg.
Honolulu Oil, No. 16-A Midway-Sunset, Kern Co.	14-32-24	3,165	O.S. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Bldg., building.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.P., casing pressure.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., cering.
C.L., center line.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., plugging big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.R.T., rigging up rotary tools.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shut off no good.
W.S.R. or W.O.S.R., wait on standard rig.
Wtr., water.

National Oil, No. 30 Midway-Sunset, Kern Co.	35-32-23	1,598	sd. sh. drlg.
Gibson Oil, No. 5 O'Brien, Midway-Sunset, Kern Co.	6-11-23	2,180	sd. sh. drlg.
Texas Co., No. 1 Pioneer, Midway-Sunset, Kern Co.	33-11-23	3,971	hd. sh. drlg.
Texas Co., No. 25 Midway-Sunset, Kern Co.	32-32-24	3,170	tested wet
Texas Co., No. 26 Midway-Sunset, Kern Co.	32-32-24	3,249	cmtd. 3,155
Texas Co., No. 27 Midway-Sunset, Kern Co.	32-32-24	2,764	sd. sh. drlg.
Hall-Baker Co., No. 1 Tejon, Kern Co.	1-10-19	2,325	dry; abd.
Central Valley Oil, No. 1 Fresno, Fresno Co.	1-12-20	95	cable tools
Pure Oil, No. 1 Cantua, Fresno Co.	31-18-17	6,174	gr. sh. drlg.
K. N. D. A., No. 4-18-J Kettleman North, Fresno Co.	18-21-17	11,500	gr. sd. drlg.
K. N. D. A., No. 43-34-J Kettleman North, Fresno Co.	34-21-17	6,396	br. sh. drlg.
K. N. D. A., No. 41-4-P Kettleman North, Fresno Co.	4-22-17	8,065	reaming
K. N. D. A., No. 83-4-P Kettleman North, Fresno Co.	4-22-17	6,685	fish. D.P.
K. N. D. A., No. 21-12-P Kettleman North, Kings Co.	12-22-17	6,000	br. sh. drlg.
K. N. D. A., No. 38-12-P Kettleman North, Kings Co.	12-22-17	4,287	sd. sh. drlg.
K. N. D. A., No. 6-6-Q Kettleman North, Kings Co.	6-22-18	7,501	br. sh. drlg.
K. N. D. A., No. 27-6-Q Kettleman North, Kings Co.	6-22-18	6,998	br. sh. drlg.
Standard Oil, No. 27-21-J Kettleman North, Fresno	21-21-17	6,376	sd. sh. drlg.
Standard Oil, No. 27-33-J Kettleman North, Fresno	33-21-17	7,687	cmtd. 7,600
Standard Oil, No. 2-11-P Kettleman North, Kings Co.	11-22-17	6,497	br. sh. drlg.
Standard Oil, No. 76-1-P Kettleman North, Kings Co.	1-22-17	5,492	sd. sh. drlg.
Superior Oil, No. 1 Huffman, Kettleman No., Fresno	29-21-17	9,773	sd. sh. drlg.
Temblor Oil, No. 1-B Kettleman Middle, Kings Co.	25-23-18	8,420	gr. sh. drlg.
Amerada Pet., No. 1 Carano, Los Banos, Merced Co.	19-10-11	2,792	br. sh. drlg.
Hancock Oil, No. 1 Huasna, San Luis Obispo Co.	30-12-33	3,361	mud and oil
Elba Oil, No. 1 Pajaro, Monterey Co.	6-13-2	3,970	recmtd. 3,871
Amerada Pet., No. 1 Sacramento, Rio Vista, Solano	24- 4-2	4,347	gas well
Tracy Drlg., No. 1 Hansen, Rio Vista, Solano Co.	25- 4-2	4,415	gas well
Standard Oil, No. 2 Weyl, McDonald Island, S. Joaquin	25- 2-4	4,885	sd. sh. drlg.
Standard Oil, No. 1 Morris, Delano, Tulare Co.	36-24-23	8,830	hd. sh. drlg.
Magnet O. & G., No. 1 Delano, Tulare Co.	29-24-24	7,450	sd. sh. drlg.
Standard Oil, No. 1 Hooper, Woodland, Yolo Co.	32- 9-1	4,619	gr. sh. drlg.
Standard Oil, No. 1 Cook, Dunnigan, Yolo Co.	32-12-1	4,080	br. sh. drlg.
Empire O. & G., No. 1 Woodland, Yolo Co.	8- 9-3	231	sd. sh. drlg.
Wilshire Oil, No. 1 Half Moon Bay, San Mateo Co.	20- 6-5	2,427	cmtd.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Richfield Oil, No. 1 Howard, Los Angeles Co.	7- 3-14	7,494	sd. sh. drlg.
Richfield Oil, No. 2-SF El Segundo, Los Angeles Co.	7- 3-14	3,386	sd. sh. drlg.
Richfield Oil, No. 1 McCray, El Segundo, Los Angeles	12- 3-15	4,281	sd. sh. drlg.
Apex Pet., No. 1 Elsie, El Segundo, Los Angeles Co.	12- 3-15	4,990	sd. sh. drlg.
Tide Water A. O., No. 1 El Segundo, Los Angeles Co.	8- 3-14	6,893	sd. sh. drlg.
Ohio Oil, No. 8 Gough, El Segundo, Los Angeles Co.	7- 3-14	7,205	sd. sh. drlg.
Texas Co., No. 5 Security, El Segundo, Los Angeles	18- 3-14	6,283	sd. sh. drlg.
Ruchti Pet., No. 1 El Segundo, Los Angeles Co.	12- 3-15	5,648	sd. sh. drlg.
Standard Oil, No. 2 Refinery, El Segundo, Los Angeles	13- 3-15	7,417	flow. 4,648 b.d.
Standard Oil, No. 4 Refinery, El Segundo, Los Angeles	13- 3-15	5,397	sd. sh. drlg.
Standard Oil, No. 5 Refinery, El Segundo, Los Angeles	13- 3-15	2,171	sd. sh. drlg.
Pac. Western Oil, No. 1 El Segundo, Los Angeles Co.	7- 3-14	7,362	hd. sh. drlg.
Getty Oil, No. 1-A El Segundo, Los Angeles Co.	7- 3-14	5,891	sd. sh. drlg.
Standard Oil, No. 84 L.A.I., Inglewood, Los Angeles	17- 2-14	1,455	cmtd. 1,455
B. C. L. Oil, No. 1 Torrance, Los Angeles Co.	5- 4-14	3,558	pump. water
C. C. M. Oil, No. 34-T Torrance, Los Angeles Co.	16- 4-14	4,960	flow. 93 b.d.
Keystone Oil, No. 2 Torrance, Los Angeles Co.	16- 4-14	2,980	cmtd. 2,975
Loma Verde Oil, No. 12 Torrance, Los Angeles Co.	16- 4-14	4,567	pump. water
Kavanaugh, E. C., No. 1 Palos Verdes, Los Angeles	17- 4-14	5,350	sd. sh. drlg.
Tide Water A. O., No. 4 Cypress, Potrero, Los Angeles	34- 2-14	4,525	sd. sh. drlg.
Shell Oil, No. 92 Reyes, Dominguez, Los Angeles Co.	33- 3-13	7,190	cleaning out
Union Oil, No. 51 Callender, Dominguez, Los Angeles	33- 3-13	1,784	sd. sh. drlg.
Union Oil, No. 56 Callender, Dominguez, Los Angeles	33- 3-13	8,110	sd. sh. drlg.
Union Oil, No. 57 Callender, Dominguez, Los Angeles	33- 3-13	4,801	sd. sh. drlg.
Union Oil, No. 10 Carson, Dominguez, Los Angeles	33- 3-13	3,944	sd. sh. drlg.
Union Oil, No. 45 Heilman, Dominguez, Los Angeles	33- 3-13	4,250	flow. 720 b.d.
Barnsdall Oil, No. 18 O'Dea, Rosecrans, Los Angeles	18- 3-13	3,890	sd. sh. drlg.
Union Oil, No. 35 H.P., Rosecrans, Los Angeles Co.	18- 3-13	6,050	sd. sh. drlg.
Union Oil, No. 17 Rosecrans, Los Angeles Co.	18- 3-13	7,330	sd. sh. drlg.
Macrate, A. N., No. 2 Rosecrans, Los Angeles Co.	17- 3-13	8,261	cmtd. 7,775
Bolsa Chica Oil, No. 1 Rosecrans, Los Angeles Co.	20- 3-13	7,944	P.B. 2,270
Burt, A. G., No. 1 Newhall, Los Angeles Co.	36- 4-17	2,583	hd. sh. drlg.
Barnsdall Oil, No. 2-S.F., Newhall, Los Angeles Co.	26- 4-17	5,084	redrlg. 2,884
Holbrook Pet., No. 1 Newhall, Los Angeles Co.	28- 4-16	6,250	P.B. 5,700
General Pet., No. 5-A Ford, Wilmington, Los Angeles	4- 5-13	3,467	sd. sh. drlg.
General Pet., No. 22 Ford, Wilmington, Los Angeles	4- 5-13	4,080	flow. 1,980 b.d.
General Pet., No. 5 Isco, Wilmington, Los Angeles	4- 5-13	2,480	sd. sh. drlg.
General Pet., No. 6 Isco, Wilmington, Los Angeles	4- 5-13	2,985	sd. sh. drlg.
Allied Pet., No. 25, Wilmington, Los Angeles Co.	32- 4-13	2,130	sd. sh. drlg.
Bankline Oil, No. 18-P.T., Wilmington, Los Angeles	34- 4-13	3,310	flow. 492 b.d.
Bankline Oil, No. 9-D.H., Wilmington, Los Angeles	34- 4-13	3,310	sd. sh. drlg.
Bankline Oil, No. 23-D.H., Wilmington, Los Angeles	34- 4-13	2,291	sd. sh. drlg.
Baker Oil, No. 1 Wilmington, Los Angeles Co.	33- 4-13	2,890	sd. sh. drlg.
Buckeye Union Oil, No. 1 Bill, Wilmington, L. Angeles	32- 4-13	2,870	sd. sh. drlg.
Caminol Oil, No. 1-P Wilmington, Los Angeles Co.	33- 4-13	3,600	flow. 150 b.d.
Colter & McAdoo, No. 1 Wilmington, Los Angeles Co.	32- 4-13	2,561	sd. sh. drlg.
McDonald & Burns, No. 2-B Wilmington, Los Angeles	32- 4-13	2,960	sd. sh. drlg.
Neilson et al., No. 1 Wilmington, Los Angeles Co.	33- 4-13	3,046	sd. sh. drlg.
Pac. Western Oil, No. 1-R Wilmington, Los Angeles	33- 4-13	2,955	cleaning out
Pongratz, Gus, No. 1 Nix, Wilmington, Los Angeles	33- 4-13	2,960	sd. sh. drlg.
Royalty Serv., No. 842-2 Wilmington, Los Angeles	33- 4-13	5,775	P.B. 5,747
Royalty Serv., No. 2-P Wilmington, Los Angeles Co.	32- 4-13	2,957	sd. sh. drlg.
Selegna Drilling, No. 12 Wilmington, Los Angeles Co.	32- 4-13	3,640	flow. 421 b.d.
Sonwell Oil, No. 3-W Wilmington, Los Angeles Co.	32- 4-13	2,970	sd. sh. drlg.
Union Pacific, No. 40 Wilmington, Los Angeles Co.	33- 4-13	3,390	sd. sh. drlg.
Union Pacific, No. 41 Wilmington, Los Angeles Co.	34- 4-13	3,436	flow. 355 b.d.
Union Pacific, No. 44 Wilmington, Los Angeles Co.	34- 4-13	3,023	sd. sh. drlg.
Union Pacific, No. 47 Wilmington, Los Angeles Co.	3- 5-13	1,984	sd. sh. drlg.
Union Pacific, No. 54 Wilmington, Los Angeles Co.	4- 5-13	2,149	sd. sh. drlg.
Union Pacific, No. 55 Wilmington, Los Angeles Co.	4- 5-13	3,460	flow. 571 b.d.
Union Pacific, No. 57 Wilmington, Los Angeles Co.	4- 5-13	3,436	flow. 590 b.d.
Union Pacific, No. 60 Wilmington, Los Angeles Co.	4- 5-13	1,862	sd. sh. drlg.
Union Pacific, No. 5-C Wilmington, Los Angeles Co.	33- 4-13	2,760	sd. sh. drlg.
Union Pacific, No. 6-C Wilmington, Los Angeles Co.	33- 4-13	3,495	sd. sh. drlg.
Cairnroo Oil, No. 1 Sterns, Pomona, Los Angeles Co.	33- 1-9	2,670	dry; abd.
Julian, C. A., No. 1 Koch, Walnut, Los Angeles Co.	5- 2-9	2,798	gr. sd. drlg.
Davis,, No. 1 Garvey Ranch, Montebello, Los Angeles	22- 2-11	501	sd. sh. drlg.
Texas Co., No. 18 Baldwin, Montebello, Los Angeles	5- 2-11	2,057	sd. sh. drlg.
St. Helens Pet., No. 20-M, Montebello, Los Angeles	5- 2-11	4,520	deep test
Hilldon Oil, No. 3 Bixby, Flood Control, Los Angeles	13- 4-13	4,002	O.S. drlg.
Union Oil, No. 1 Flood Control, Los Angeles Co.	13- 4-13	4,110	O.S. drlg.
Texas Co., No. 4 Bauman, Long Beach, Los Angeles	19- 4-12	3,792	sd. sh. drlg.
Texas Co., No. 14 Harlow, Long Beach, Los Angeles	19- 4-12	3,421	sd. sh. drlg
Rico Pet., Inc., No. 1 Long Beach, Los Angeles Co.	30- 4-12	3,664	sd. sh. drlg.
Richfield Oil, No. 4 Keon, Long Beach, Los Angeles	29- 4-12	3,495	sd. sh. drlg.
Exeter Oil, No. 5 Transport, Long Beach, Los Angeles	30- 4-12	3,064	cmtd.
Union Oil, No. 100 Santa Fe Springs, Los Angeles Co.	6- 3-11	10,739	redrlg. 10,409
Texas Co., No. 7-W Santa Fe Springs, Los Angeles	6- 3-11	6,530	milling
Continental Oil, No. 40 Bixby, Seal Beach, Orange Co.	2- 5-12	6,930	O.S. drlg.
Shell Oil, No. 4-1 Columbia, Olinda, Orange Co.	9- 3-9	6,400	hd. sd. drlg.
Brea Canyon Oil, No. 36 Brea Canyon, Orange Co.	2- 3-10	4,386	hd. sh. drlg.
Standard Oil, No. 127 Murphy, West Coyote, Orange	18- 3-10	3,240	sd. sh. drlg.
Standard Oil, No. 11 Coyote, East Coyote, Orange Co.	22- 3-10	3,450	sd. sh. drlg.
Arrowhead Oil, No. 2 Bradford, Richfield, Orange Co.	32- 3-9	4,632	P.B. 4,555
Texas Co., No. 2 Isaacs, Richfield, Orange Co.	32- 3-9	3,600	gr. sd. drlg.
Union Oil, No. 29 Chapman, Richfield, Orange Co.	30- 3-9	8,818	idle
Union Oil, No. 46 Chapman, Richfield, Orange Co.	29- 3-9	1,994	sd. sh. drlg.
Hjorth & Mohr, No. 1 Yorba, Orange Co.	22- 3-9	1,403	P.B. 1,345
Beverly Hills Pet., No. 1 Fricke, Yorba, Orange Co.	21- 3-9	1,914	bailing
Mid-State Pet., No. 1 Oliver, Yorba, Orange Co.	22- 3-9	1,600	bailing
Bachmann Pet., No. 1 Page, Yorba, Orange Co.	22- 3-9	923	sd. sh. drlg.
Shell Oil, No. 1-H Anaheim, Orange Co.	9- 4-10	7,181	sd. sh. drlg.

KANSAS

Week Ending October 23 (Descriptions are East unless marked otherwise)

Barber County

Heimerich & Payne et al No. 1 Blunk Est., C SE sec. 19-34-13w. S.D. 5,253 ft.
Olson Oil Co. and Skelly Oil Co. No. 1 Elsea, SW SE NW sec. 27-32-14w. Drlg. 5,145 ft.
Palmer Oil Corp. et al No. 1 Warwick, C NW sec. 29-31-10w. Rig.
W. I. Southern, Inc., No. 1 Davis, SE SE NE sec. 24-34-15w. T.D. 5,600 ft.; P.B. 4,860 ft.; D.&A.

Barton County

Brouk and National Ref. Co. No. 1 Gory, NW SW sec. 10-17-13w. T.D. 3,348 ft.; 3,000 ft. O.I.H.; W.O.C.
Martin & Foraker et al No. 1 Dick Est., NE SW SW sec. 31-19-11w. Rig.
Arch Merriam et al No. 1 Norris, NE NE NW sec. 33-17-11w. S.D. 360 ft.
Tom Palmer et al No. 1 Polzin, NW SE sec. 4-16-12w. Drlg. 1,805 ft.
C. L. Price No. 1 Hammeke, NE NE SW sec. 12-18-12w. Sil. 3,415-27 ft.; 1,800 ft. O.I.H.
Shell Pet. Corp. No. 1 Peterman, SE NE SE sec. 13-16-14w. T.D. 3,366 ft.; acd.: pmp. 415 B.O. in 20 hrs.
Ralph Wixson et al No. 1 Buhrle, SE SE NE sec. 14-16-13w. T.D. 3,448 ft.; D.&A.

Chautauqua County

C. L. Brosius et al No. 1 Garrett, NW SW NW sec. 26-32-11. H.F.W. 2,076 ft., T.D.; P.B. 1,545 ft.; C.O.
W. G. Buffington No. 1 Fisher, CWL SW NW sec. 10-34-9e. S.D. 1,677 ft.
C. R. Craft No. 1 Lagree, SE NW NE sec. 8-32-12e. T.D. 2,080 ft.; P.B. 687 ft.
Harrison No. 1 Brown, NE SE NE sec. 19-34-10. S.D. 820 ft.
Ingot Oil Co. No. 1 McKee, SW NE SW sec. 21-32-12. T.D. 1,209 ft.; acd.
I. W. Siegel No. 1 Temple, SW cor. sec. 31-32-12. Rig.

Clark County

Olson Oil Co. et al No. 1 Watkins, SW NW sec. 23-32-21w. Drlg. 2,453 ft.

Cowley County

Arthur Brewer No. 1 Shepard, NE NE SE sec. 20-32-4e. Drlg. 170 ft.
Arthur Brewer No. 1 Starkey, SW NE sec. 16-30-4. T.D. 2,802 ft.; pot. 191 B.O.; comp.
Pryor & Lockhart No. 1 Brown, NE SE SE sec. 34-33-2e. Sil. 3,853-64 ft., T.D.; P.B. 3,403 ft.; set 7-in. 3,361 ft.
Smith & Price No. 1 Henderson, SW SW sec. 25-32-6. Drlg. 1,100 ft.

Ellis County

Aylward Prod. Co. et al No. 1 Berens, SE SE sec. 10-14-16w. Drlg. 3,000 ft.
Brunson Drlg. Co. et al No. 1 Weisner, SE SW SE sec. 31-13-17w. T.D. 3,651 ft.; acd.; flwg. by hds.
Colonial Oil Co. and Bernheimer No. 1 Albert, SW SW NE sec. 31-12-18w. Drlg. 1,370 ft.
Lario O. & R. Co. No. 1 Bell, NW NW NE sec. 8-12-18w. Drlg. 3,565 ft.
P. G. Reynolds et al No. 1 Karlin, NW cor. sec. 13-12-18w. Drlg. 2,910 ft.
C. E. W. Skiles et al No. 1 Jensen, SW SE NE sec. 26-12-18w. S.D. 2,910 ft.
Earl Wakefield et al No. 1 Burnett, NW NW NE sec. 1-11-18. T.D. 3,574 ft.; pot. 1,890 B.O.; comp.

Ellsworth County

Hinkle et al No. 1 Alden, SE SE SW sec. 17-17-10w. Drlg. 2,725 ft.

Ford County

Olson Oil Co. et al No. 1 Fowler, C SW sec. 26-27-22w. Drlg. 3,155 ft.

Grant County

R. K. Wilson No. 1-20 Bank, C NE sec. 20-28-37w. T.D. 2,685 ft.; 7,000,000 ft. gas; comp.
R. K. Wilson No. 1-22 Helmly, C SE sec. 22-28-37w. Drlg. 2,335 ft.

Greenwood County

Eagle Oil Co. No. 1 Stine, NE NE SE sec. 13-28-10. Drlg. 730 ft.
Ward McGinnis et al No. 1 Henly Estate SW cor. sec. 25-25-9. T.D. 2,234 ft.; H F.W.; P.B.; cmt. 6-in.
S. Van Devanter et al No. 1 Dove, NE SE SW sec. 12-28-11. S.D. 1,100 ft.
Whittaker & Johnson No. 1 Cannon, CEL SE NW sec. 8-26-13. Fsg. 375 ft.

Harvey County

Allison et al No. 1 Hawks, SE SW NE sec. 16-24-1w. C.O. 500 ft.

Jackson County

Lemmick Oil Co. No. 1 Marble Savings Bank, NE cor. sec. 26-9-14. Spd. and S.D.

Kearny County

J. L. Murphy No. 1 Masonic Home, C NW sec. 1-26-36w. T.D. 1,468 ft.; T.A.

Kingman County

Carter Oil Co. No. 1 Davis, C E½ NE NE sec. 24-28-8w. Drlg. 4,184 ft.

Logan County

Morgan, Flynn, Cobb et al No. 1 McMillen, C NW sec. 9-13-37w. Drlg. 4,805 ft.

McPherson County

C. E. Ash Drlg. Co. No. 1 Broman, NE NE NW sec. 19-17-4w. Drlg. 3,220 ft.
Boyle & Grossman No. 1 Diener, SE SE NE sec. 35-19-1w. Drlg. 2,165 ft.
Bradley Bros. No. 1 Barnholt, SW SW SE sec. 30-20-5w. Chat 3,292 ft.; T.D. 3,336 ft.; P. 115 B.O. in 14 hrs.; down 5 hrs.
Fred C. Frank et al No. 1 Doles, SE NW NE sec. 12-19-1w. Set 8-in. 2,775 ft.; S.D.
Wamhoff et al No. 1 Nuse, SE NE SW sec. 18-18-4w. S.D. 1,850 ft.

Meade County

Pacific Mid-West Co. No. 1 Rexford, NE SE SW sec. 8-30-29w. Drlg. 900 ft.

Mitchell County

Geo. Siedhoff et al No. 1 Greiss, SW SW SE sec. 16-8-10w. S.D. 4,022 ft.

Ness County

Trojan O. & G. Co. No. 1 Moses, C SW NW sec. 10-18-25w. Drlg. 150 ft.
Trojan O. & G. Co. No. 1 Page Milling Co., SE SE NW sec. 36-18-26w. Fsg. 3,265 ft.
Newton Dev. Co. No. 1 Tenny, NW NW SE sec. 19-18-25w. T.D. 4,450 ft.; pmp. 50 B.O. in 24 hrs.; comp.

Osborne County

Fred C. Chaddox and Atlantic Ref. Co No. 1 Slater, NE SW NE sec. 33-10-15w Wtr. rose 200 ft. in hole, 3,710-11 ft.; U.R. 6-in.
F. E. Fullerton & Son No. 1 Moray, NE SE SW sec. 27-10-12w. S.D. 500 ft.

Phillips County

C. W. Davidson et al No. 1 Elliff, SE NE NE sec. 35-5-18w. S.D. 350 ft.

Pratt County

Colonial Oil Co. et al No. 1 Hays, SE SW sec. 4-26-12w. Drlg. 1,758 ft.
Skelly Oil Co. et al No. 1 Adams, SE NW NE sec. 2-28-11w. H.F.W. 4,282-92 ft.; to P.B.

Reno County

Lib Phillips et al No. 1 McPheeters, NE NE NW sec. 22-26-8w. Spd. and S.D.
Sam Schneider et al No. 1 Kroecker, NE cor. sec. 12-22-5w. S.D. 2,930 ft.
Westgate-Greenland et al No. 1 Popp, SW SW NE sec. 7-25-4w. Drlg. 925 ft.

Rice County

Bell O. & G. Co. et al No. 1 Timbers, NW NE sec. 8-21-8w. Drlg. 2,615 ft.
Elbar Corp. No. 1 Ehler, NE SE sec. 8-21-9w. Drlg. 3,008 ft.
Gerbrand-Pulse Oil & Drilling Co. No. 1 Wellman, SW cor. sec. 22-21-9w. Est 3,000,000 ft. gas, 3,316-17 ft., T.D.; set 7-in. 3,298 ft.; C.O.
Gillespie et al No. 1 Strong, NE NW sec. 9-18-8w. Spd. and S.D.
John Hanna et al No. 1 Marshall, NE NW NW sec. 30-18s-8w. S.D. 1,530 ft.
Skiles et al No. 1 Campbell, SE SE NE sec. 28-19-9w. Swb. 14 B.O.P.H. and 20% wtr.; T.D. 2,957½ ft.; to D.D.
E. Witt et al No. 1 Fair, NW SE SE sec. 4-22-8w. S.D. 2,495 ft.

Rooks County

C. R. Craft et al No. 1 Ziegler, NE SW sec. 8-10-16w. Set 7-in. 3,132 ft.; W.O.C.
Dunham et al No. 1 Fike, SW cor. sec. 9-9-17w. T.D. 3,326 ft.; pmpd. 50 B.O. and 35 B.W. in 8 hrs.; fsg.
Superior Oil Corp. et al No. 1 Casey, SE SE sec. 35-10-19w. Drlg. 1,506 ft.
Texas Co. No. 1 McCarroll, C W½ W½ NW sec. 29-10-17w. Set 10-in. 1,347 ft.; W.O.C.

Rush County

Duwe & Brouk No. 1 Lebsack, SE SE NE sec. 13-16-16w. Sil. 3,492-95 ft.; 1,500 ft sulfur water in hole in 2½ hrs.; T.D. 3,512 ft.; S.D.O.
Earl Wakefield et al No. 1 Zimmerman SE SE SW sec. 7-16-18w. Drlg. 3,347 ft.
Wakefield & Brouk No. 1 Kerbs, NW NW SE sec. 11-17-16w. S.D. at 150 ft.

Russell County

Cities Service Oil Co. et al No. 1 Eichman, SW SE sec. 12-15-14w. T.D. 3,126 ft.; 1,100 ft. O.I.H. in 24 hrs.
Emrichs et al No. 1 Anderson, NE SE SW sec. 33-15-11w. Spd. and S.D.

Murfin and Vernon O. & G. Co. No. 1 Pearson, NE cor. sec. 31-15-15w. Spd and S.D.

Parks No. 1 Opdycks, SW cor. sec. 20-14-13w. Drlg. 2,920 ft.

Phil-Han Oil Co. No. 1 Deines, NE NE NW sec. 33-14-14w. Drlg. 2,780 ft.

C. L. Price No. 1 Sebesta, NE NE sec. 36-15-11w. Drlg. 1,895 ft.

Trapp Drlg. Co. et al No. 1 Polcyn, NE SE sec. 34-14-15w. H.F.W. 3,355-61 ft.; to P.B.

Winkler & Koch No. 1 Jones, SE SE NW sec. 22-14-13w. Sil. 3,180 ft.; S.D.O.

Sedgwick County

Fulton et al No. 1 fee, NE SE sec. 35-28-1e. Fsg. 1,550 ft.

McKnab No. 1 Garrett, SE SW SW sec. 18-29-2e. S.D. 100 ft.

L. W. Murfin et al No. 1 Martin, SE NW sec. 32-28-1e. Drlg. 3,140 ft.

National Ref. Co. No. 1 fee, SE NE SE sec. 26-27-2e. Set 8-in. 2,354 ft.

M. Steinbuchel et al No. 1 Shaffer, SW SW NW sec. 18-25-1e. Drlg. 545 ft.

W. G. Talbott et al No. 1 Downs Est., SE SE NW sec. 32-28-2e. T.D. 2,232 ft.; 3,922,000 ft. gas.

Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. S.D. 2,010 ft.

Stafford County

W. P. Faulkner No. 1 Moses, NW SW sec. 9-22-13w. S.D. 2,170 ft.

Hannum Drlg. Co. et al No. 1 G. H. Thole, NE sec. 27-23-12w. Drlg. 3,000 ft.

Kessler O. & G. Co. et al No. 1 Pinkston NE NW sec. 17-22-14w. Drlg. 3,181 ft.

Fred Rust et al No. 1 Drach, NE SW sec. 12-22-13w. Cd. 3,455-57 ft.; S.O.; D.S.T.

Fred P. Rust et al No. 1 Johnson, NW SW sec. 29-25-12w. T.D. 4,278 ft.; D.&A.

Stanolind O. & G. Co. No. 1 Shank, SE cor. sec. 17-24-13w. Drlg. 1,910 ft.

Stanolind O. & G. Co. No. 1 Tiechman, SE cor. sec. 13-22-13w. Drlg. 1,858 ft.

Torry & Feaster et al No. 1 Allen, NW SE sec. 34-22-12w. Drlg. 3,735 ft.

Stevens County

United Prod. Co. No. 1 Beardsley, C N½ sec. 12-31-35w. Drlg. 2,100 ft.

Sumner County

Cities Service Oil Co. No. 1 McCoy, SE SW sec. 11-35-2e. Drlg. 3,026 ft.

W. M. McKnab No. 1 Blair, SW cor. sec. 7-30-1e. T.D. 3,867 ft.; swbg. 45.9-grv. oil.

Magnolia Pet. Co. No. 1 Baird, SW SE SE sec. 2-30-4w. R.U.S.T. 4,401 ft.

R. J. Wixson No. 1 Newton, SE SE sec. 21-30-2e. S.D. 1,975 ft.

Trego County

Central Commercial Oil Co. No. 1 Locker, C SW sec. 12-14-22w. Drlg. 4,335 ft.

Thurman Hill et al No. 1 Lawson, SW SW NW sec. 7-14-22w. Skd. rig. 30 ft. north.

R. E. McNeely et al No. 1 Hille, C SE NE sec. 22-15-24w. Drlg. 3,558 ft.

Phillips Pet. Co. No. 1 Trego, C SE SW sec. 14-12-23w. Drlg. 4,073 ft.

Wallace County

Wilcox O. & G. Co. No. 1 Parker, SE SE NE sec. 9-11-40w. S.D. 4,284 ft.

Woodson County

Seibel No. 1 Kerschner, CNL NE NE sec. 3-26-15. T.D. 1,498 ft.; D.&A.

Steinle No. 1 Kash, SE SE sec. 4-26-15 T.D. 1,570 ft.; D.&A.

OKLAHOMA

Week Ending October 23

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. T.D. 2,227 ft.; U.R. 6-in. at 2,140 ft.

Caddo County

Indian Terr. Illum. Oil Co. No. 1 Dome-Bo, C NE SE sec. 29-6-10w. T.D. 5,237 ft.; P.B. 4,929 ft.; W.O.C.

Cleveland County

Harper-Turner No. 1 Pollock, C W½ NW NW sec. 13-9-2w. Drlg. 3,420 ft.

Creek County

M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. T.D. 3,018 ft.; P.B. 3,015 ft.; drlg. up swb.

Garvin County

Carter Oil Co. No. 1 Potts, C E½ SE NW sec. 36-1n-3w. Drlg. 3,260 ft.

S. C. D. Edwards No. 1 Clark, NE cor. sec. 16-3n-3e. T.D. 2,405 ft.; drill pipe stuck.

Grady County

Doyle Pet. Co. No. 1 Huffine, NW NW SE sec. 30-5-8w. Drk.

Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w. Drlg. 8,508 ft.

Greer County

J. I. Medlin et al No. 1 Broudie, NW cor. sec. 5-6n-20w. T.D. 90 ft.; S.D.

Haskell County

Continental Oil Co. No. 1 Ferguson, SW SE NE sec. 33-8-20. T.D. 7,003 ft.; 1,300,000 ft. gas.

Hughes County

Burke-Greis Oil Co. No. 1 Rhea, SW SW SE sec. 14-10-9. Drlg. 3,160 ft.

E. H. Moore, Inc., No. 1 Buck, NW SW SW sec. 21-8-10. Drlg. 4,456 ft.

Phillips Pet. Co. No. 1 Becker, NE NW SW sec. 8-5-10. T.D. 4,424 ft.; D.S.T.

Pure Oil Co. No. 1 Rogers, SE SE NE sec. 18-8-12. Drlg. 3,170 ft.

Kay County

E. J. Shaffer et al No. 1 McKee, NE NW sec. 20-28-1w. Rig.

Kiowa County

Hughes & Reese No. 1 Fultz, SE cor. sec. 10-6-18w. T.D. 865 ft.; S.D.

Lincoln County

Ardie Oil Co. No. 1 State, NE NE SE sec. 16-14-4. T.D. 4,988 ft.; 4 bailers oil in 12 hrs.; S.D.

C. L. Carlock No. 1 Young, C N half NW NW sec. 23-15-5. Drlg. 2,730 ft.

Riley & Talbot et al No. 1 Weidler, NW SW NW sec. 20-17-2e. Drlg. 4,245 ft.

Logan County

Sunray Oil Co. and Olson Drlg. Co. No. 1 Canning, SW SW NE sec. 31-17-1w. T.D. 5,812 ft.; D.&A.

Noble County

Darby Pet. Corp. No. 1 McCoy, SE SE SW sec. 24-23-2w. T.D. 4,848 ft.; D.&A.

Seaboard Western Oil Co. et al No. 1 Guthrie, NW NW NE sec. 6-20-2w. T.D. 5,454 ft.; flwd. 312 B.O. in 24 hrs.; flwd. 245 B.O. in 24 hrs.; C.O.

Okfuskee County

F. W. Merrick No. 1 Mackey, NE NE SW sec. 29-11-10. Drlg. 3,800 ft.

Riverland Oil Co. No. 1 Board, NE NW SE sec. 10-13-10. Set 6-in. 2,788 ft.; T.D. 2,840 ft.

Osage County

National Ref. Co. No. 2 Page, NW SW SE sec. 28-22-9. T.D. 2,850 ft.; D.&A.

Pawnee County

H. R. Hollenbach et al No. 1 Clark, NW cor. sec. 34-21-6w. Drlg. 1,885 ft.

Pittsburg County

Okla. Dist. Oil Co. No. 1 Beeler, NE NE SW sec. 7-7-14. T.D. 5,165 ft.; R.U. to D.D.

Phillips Pet. Co. No. 1 Gilcrease, NW NW SE sec. 16-7-12. Drlg. 4,272 ft.

Pontotoc County

Boettcher O. & G. Co. No. 1 Gann, SE NW NE sec. 25-4n-7e. T.D. 4,347 ft.; S.D.

Kerlyn Oil Co. No. 1 Pratt, SW SE NE sec. 6-4-4e. Wilcox 2,290-2,355 ft.; T.D.; rng. Schlumberger.

Norbia Oil Co. No. 1 McBride, NE NE SW sec. 10-2n-5e. Loc.

Papoose Oil Co. et al No. 1 Jones, NW SE NW sec. 2-4-5. Viola 2,595 ft.; T.D. 2,840 ft.; run Schlumberger; S.D.O.

Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. T.D. 3,320 ft.; drill pipe stuck. S.D.

Pottawatomie County

Hightower No. 1 Baker, SE SE NW sec. 27-6-3e. Spd.

Seminole County

E. W. Jones et al No. 1 Belford, NE SE NE sec. 9-9-8. Drlg. 4,597 ft.

Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Salina, SE NE NW sec. 4-5-6. T.D. 3,317 ft.; P.B. 3,214 ft.; no shut off; S.D.O.

Texas County

Hagey et al No. 1 Becker, C NE sec. 4-1n-13ecm. T.D. 2,967 ft.; 936,000 ft. gas; to shoot.

Hagey et al No. 1 Peck, C NE sec. 6-1n-13ecm. Drlg. 2,570 ft.

Washita County

John Koberg No. 1 Harms, NW NW NE sec. 6-10-16w. T.D. 4,260 ft.; S.D.

SOUTHERN OKLAHOMA

Atoka County

C. M. Sheldon and Gardner Pet. Co. No. 1 Lee, NE NW SW sec. 2-4s-10e. T.D. 1,335 ft.; C.O.

Coal County

Carter Oil Co. No. 1 Claytor, C W½ NE SW sec. 27-2n-9e. T.D. 6,217 ft.; swb. 176 B.O. in 24 hrs.

Phillips Pet. Co. No. 1 Beck, SE SW SW sec. 6-1n-9e. Drlg. 4,420 ft.

Cotton County

Bowers & Wise No. 1 Pendergraft, NW SE SW sec. 4-4s-12w. Drk.

Jackson County

Ace Gutowsky No. 1 Booker, NW cor. sec. 33-2n-18w. T.D. 1,031 ft.; D.&A.

Jefferson County

Massad & Swansberger No. 1 Barrett, NE SE SE sec. 14-6s-6w. T.D. 1,890 ft.; S.D.

Johnston County

Patton et al No. 1 McCrummins, C SW SW NE sec. 16-1s-6e. S.D. 1,380 ft.

W. T. Sheldon No. 1 Chapman, C NW NW sec. 26-4s-6e. T.D. 2,177 ft.; plg. csg.

Marshall County

F. W. Merrick, Inc., No. 1 Robinson, NE cor. sec. 33-7s-4e. Drlg. 750 ft.

Paul Robb et al No. 1 Yittitoe, C NE SE sec. 11-5s-4e. O.W.D.D.; C.O. to 720 ft.; S.D.

Murray County

Meyer & Greenup No. 1 Arbuckle, NW NW NE sec. 18-2s-3e. Spd. and S.D.

O. O. Owens No. 1 Fryer, NE SE NE sec. 34-1s-3e. T.D. 2,574 ft.; 1,400 ft. W.I.H. S.D.

Sinclair Prairie Oil Co. No. 1 Lancaster Trust, C SW NE sec. 10-1-2e. T.D. 4,404 ft.; freeing stuck pipe.

Pushmataha County

Erle Halliburton et al No. 1 Bagwell, SW NE NE sec. 30-3s-15e. T.D. 5,669 ft.; S.D.; repairs.

Stephens County

Jack Cohen No. 1 Pierce, NE NE NW sec. 24-2s-6w. Drlg. 1,672 ft.

Colline Oil Co. No. 1 Johnson, C SW SE NE sec. 1-2n-8w. T.D. 10,000 ft.; set 7-in. at 8,971 ft.; W.O.C.

Chas. Newsom No. 1 Pfile, SW cor. sec. 1-2s-7w. T.D. 3,551 ft.; S.D.O.

Ed Parsons No. 1 Blake, C SW NW sec. 22-2n-8w. T.D. 5,043 ft.; drlg. by swb.; flwd. 40 to 50 B.O. by heads every 2 days.

Tillman County

Cavens et al No. 1 Southerland, SW SW NW sec. 35-4s-16w. T.D. 44 ft.; S.D.

Gulf Oil Corp. No. 1 Prichard, SE NW SE sec. 32-3s-16w. Drlg. 5,477 ft.

Tom Walker No. 1 Bowman, SW SW NW sec. 10-4s-17w. S.D. 200 ft.

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo—Rodessa

F. W. Burford No. 1 Pitts, NW sec. 1-23-16. T.D. 6,068 ft.; tstg.

F. W. Burford No. 1 R. A. Terry, NW E½ sec. 2-23-16. Drlg. 4,154 ft.

F. W. Burford No. 4 Terry, SE NE sec. 2-23-16. R.U.

F. W. Burford No. 1 U. S. Govt., NE SE SW sec. 6-23-16. Drlg. 2,610 ft.

Gulf Ref. Co. No. 2 Campbell, C sec. 4-23-16. T.D. 6,061 ft.; W.O.S.R.

R. W. Norton No. 7 Starke, NW sec. 17-23-16. Comp.; flw. 97 B.P.D.; T.D. 5,985 ft.

Standard Oil of La. No. 1 Mrs. Alice N. Gibson, NW NE SW sec. 10-23-16. R.U.

Standard Oil Co. No. 3 McCoy, NE cor. NE NW sec. 10-23-16. Drlg. 5,531 ft.

Union Prod. Co. No. 6 Starke, SW cor. sec. 8-23-16. Drlg. 5,728 ft.

G. H. Vaughn No. 1 J. G. Yates, NW cor. sec. 2-23-16. Drlg. 4,445 ft.

N. LOUISIANA WILDCATS

Bienville Parish

H. L. Hunt and Seaboard No. 1 Federal Ld. Bk., SW sec. 10-16-16. Drlg. 5,550 ft.

Bossier Parish

Ark.-La. Gas Co. No. 4 R. O. Roy, sec. 18-17-11. 7-in. 4,885 ft.; T.D. 5,028 ft.

L. W. Dennis No. 1 D. T. Roos, SW NW NW sec. 13-19-12. 8-in. cmtd. 858 ft.; T.D. 858 ft.

Triangle Drlg. Co. No. 1-A Schuler Est., SE NW sec. 13-17-12. T.D. 3,118 ft.; prep. A.G.L.

Caddo Parish

W. D. Chew No. 2 Spell, NE SE sec. 29-21-15. Comp.; flw. 400 B.P.D.; T.D. 1,522 ft.

W. D. Chew No. 3 Spell, NE SW SE sec. 29-21-15. R.U.

Mrs. O. P. Clement No. 1-B Caddo Lvy. Bd., NE sec. 5-20-16. Drlg. 25 ft.

W. P. Clark No. 1 Dyer, C sec. 10-20-16. T.D. 1,710 ft.; S.D.

D. C. R. Oil Co. No. 1 Dickinson, SW SW NW sec. 15-19-14. Cg. 2,420 ft.

D. C. R. Oil Co. No. 1 Sibley, NW SW sec. 15-19-14. Comp.; 15 B.P.D.; T.D. 2,725 ft.

La. Oil Prod. Co. No. 11-B Muslow, sec. 4-20-15. T.D. 2,213 ft.; W.O.S.R.

La. Oil Prod. Co. No. 13-B Muslow, SE NW SW sec. 4-20-15. 6-in. 2,140 ft.

O. O. Olsen No. 1 R. T. Sharp, W½ NW sec. 15-18-16. Drlg. 3,553 ft.

Frank Perkins No. 2-A Stiles, SW NW SW sec. 33-21-16. 6-in. 1,830 ft.; T.D. 1,854 ft.

Prairie River Synd. No. 1 Hutchinson, SW NW sec. 15-15-12. S.D. 9,141 ft.

Sam M. Richardson No. 1 Sentell, SW E½ sec. 9-19-14. T.D. 2,460 ft.; tstg.

Surf-Maji Oil Co. No. 3 Self, SE sec. 10-20-15. W.O.S.R. 2,193 ft.

Claiborne Parish

Atlantic Ref. Co. et al No. 1-C Patton, sec. 29-21-4. Comp.; flw. 70 B.P.H.; T.D. 5,187 ft.

R. L. Bauman No. 2 C. S. L. Patton, SW SW NE sec. 1-20-5. Drlg. 4,540 ft.

E. W. Gill No. 1 English, S½ NE SW sec. 29-21-4. Drlg. 2,500 ft.

Harry Hanbury No. 2-D E. Vaughn, N½ SW SW sec. 30-21-4. T.D. 5,187 ft.; tstg.

T. L. James No. 1 Baker, sec. 25-21-5. 500 ft. oil; T.D. 5,222 ft.; W.O.S.R.

Lyons & Neely No. 1 Simms, NE NE sec. 32-20-5. T.D. 5,845 ft.; fsg.

W. L. McClanahan No. 1 J. T. Lewis, W½ SW SE sec. 25-20-7. S.D. 300 ft.

A. O. Olson No. 1 W. H. Patton, S½ SE SE sec. 26-21-5. Drlg. 4,490 ft.

C. R. Schuster No. 3 Patton Est., N¼ NE NE sec. 1-20-5. Fsg. for csg.; T.D. 5,377 ft.

Sloan & Zook Co. No. 4 W. H. and M. Patton, sec. 1-20-5. 10-in. cmtd. 904 ft.

A. O. Olson No. 4-A T. F. Patton, N½ SE SW sec. 30-21-5. T.D. 5,197 ft.; tstg.

Shreveport Oil Corp. No. 1 Edwards, NE sec. 16-20-5w. W.O.S.R.; T.D. 5,438 ft.

Tippett Drlg. Co. No. 2 C. S. L. Patton, sec. 1-20-5. 10-in. cmtd. 725 ft.

Concordia Parish

Coastal Mineral & Dev. Co. No. 1 Winsten, sec. 23-7-9e. T.D. 2,090 ft.; S.O.; prep. set csg.

De Soto Parish

Clear Lake Oil Co. No. 1 J. A. Wooluma, NW sec. 29-12-12. T.D. 2,667 ft.; S.O.; S.D.; wt. csg.

Kingston Oil Co. No. 1 Scott, SE NE sec. 32-14-13. Drlg. 1,105 ft.

Lincoln Parish

T. L. James No. 1 J. J. Spence, SW NE sec. 11-17-4. T.D. 7,023 ft.; D.&A.

Ludel Oil Corp. No. 1 Gill, NE NE NW sec. 36-20-2w. T.D. 5,318 ft.; S.D.

Magnolia Pet. Co. No. 2 F. Corbin, NE cor. sec. 6-20-4. T.D. 5,318 ft.; acd. and tstg.

E. H. Moore, Inc. No. 1 Arcadia Comm. Bk., C NW sec. 22-18-5. Drlg. 5,399 ft.

Red Iron Drlg. Co. No. 2 T. F. Patton, NW SW NE sec. 6-20-4. R.U.

Red River Parish

W. J. Hunter No. 2 Long Bell Lbr. Co., SW NW sec. 20-19-9. T.D. 3,604 ft.; D. &A.

Sabine Parish

Fox & Phillips No. 1 Cook Ld. Co., SW SE NW sec. 1-9n-12w. R.U.

Gold Oil Co. No. 1 Darby, N½ SE sec. 21-7-11. Drlg. 1,265 ft.

Hunter Co. No. 1 H. L. Bowman Co., NW cor. sec. 13-7-17. Drlg. 1,850 ft.

Odell Henson No. 1 Long Bell Lbr. Co., SE NE NW sec. 5-8-13. T.D. 1,811 ft.; comp.; 5 B.P.D.

Remine et al No. 1 4-L Co., SW SW sec. 7-5-12. Drlg. 3,530 ft.

Webster Parish

V. L. Foster No. 2 J. M. Mixon, SE sec. 21-21-10. Drlg. 5,975 ft.

Magnolia Pet. Co. No. 4 Aarnes-Cox, NW sec. 22-21-10. Drlg. 7,775 ft.

Ohio Oil Co. No. 47 Bodcaw Acct. 2, SW SE sec. 15-21-10. T.D. 8,459 ft.; 7-in. 8,410 ft.

Ohio No. 1 S. P. D. Coyle and W. Cox, SW SW SE sec. 23-21-10. Drlg. 7,659 ft.

Ohio Oil No. 1 T. Crichton, Acct. No. 2, SE NE sec. 21-21-10. Comp.; 600 B.P. D. dist.; T.D. 8,503 ft.

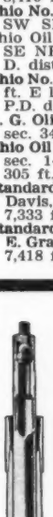
Ohio No. 7-B R. L. Holloway 586 ft. N. 758 ft. E line, sec. 23-21-10. Comp.; 425 B. P.D. dist.; T.D. 8,188 ft.

A. G. Oliphant et al No. 1 Banks, NE NE sec. 34-21-10. Drlg. 7,917 ft.

Ohio Oil Co. No. 1 D. W. Merritt, SW cor. sec. 14-21-10. 7-in. 8,315 ft.; T.D. 8,305 ft.

Standard Oil Co. of La. No. 7 Mrs. M. F. Davis, NE NE NW sec. 23-21-10. Drlg. 7,333 ft.

Standard Oil Co. of La. No. 2-B Mrs. M. E. Gray, NE NE NW sec. 26-21-10. Drlg. 7,418 ft.



New MAC
PLUNGER BARREL
for 2-inch tubing

Outlasts three ordinary barrels, as Steel Plunger works in and out of Cast Iron Barrel as much as 2 feet on the up and down stroke and more if desired, thus flushing itself free of sand or gypsum.

Reversible Valve Body and Plunger make for lowest upkeep.

Furnished with 2-Cup Standing Valve and with, or without, Garbutt Rod.

Save, with the New "MAC"!

Ask for complete details and price list.

McGREGOR
WORKING BARREL COMPANY
Bradford, Pa., U.S.A.

United Gas No. 6 Tillman, NE sec. 28-21-10. Drlg. 5,247 ft.
Woodley Pet. Co. No. 2-B L. C. Cox. Drlg. 8,104 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Brookshire, sec. 66-12s-3e. T.D. 11,909 ft.; stuck D.S., fsg.

Anse La Butte—St. Martin Parish

Anse La Butte Oil Corp. No. 1 Billeand, sec. 117-9s-5e. Core sd.; oil odor 800 ft.
Crusader Pet. Co. No. 3-B Begnaud. T.D. 4,140 ft.; salt; abd.
Crusader Pet., Inc., No. 1 Central Oil Co., sec. 86-9s-5e. S.D. 407 ft.
Crusader Pet., Inc., No. 1 Patin, sec. 46-9s-5e. 10¾-in. csg. 400 ft.; T.D. 1,888 ft.; S.W. sd.; P.B. 983 ft.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc No. 2 Wurzlow, sec. 17-22s-18e. S.D. 910 ft.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 4 Wilbert, sec. 74-9s-10w. T.D. 4,106 ft.; P.B. sdtrkd. T.D. 5,022 ft.; salt; abd.
Humble O. & R. Co. No. 5-A Wilberts, sec. 75-9s-10w. R.U.

Bayou Cocotris—Terrebonne Parish

Shell Pet. Corp. No. 3 Pelican, sec. 19-17s-15e. T.D. 9,526 ft.; P.B. 9,506 ft.; W.O.C.
Shell Pet. Corp. No. 3-B Realty, sec. 18-17s-15e. 16-in. csg. 117 ft.; drlg. sh. 5,666 ft.

Bayou De Allemands—St. Charles Parish

Amerada Pet. Corp. No. 1 St. Charles Ld. Co., sec. 38-15s-20e. 10¾-in. csg. 2,698 ft.; drlg. sh. 6,412 ft.

Big Lake—Cameron Parish

Union Sulphur Co. No. 1 P. J. Hebert, sec. 18-12s-8w. 6⅝-in. csg. 8,441 ft.; T.D. 9,289 ft.; D.S. stuck; fsg.
Union Sulphur Co. No. 2 J. O. Hebert, sec. 18-12s-8w. Drlg. sd. 8,137 ft.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 36 Watkins. Drlg. L. 3,680 ft.

Bosco—Acadia Parish

Superior Oil Co. No. 1 J. L. Larcade, sec. 64-8s-3e. Drlg. sh.&sd. 8,140 ft.
Superior Oil Co.-Pure Oil Co. No. 5 Larcade, sec. 35-8s-3e. T.D. 10,216 ft.; fsg.

Caillou Island—Terrebonne Parish

Texas Co. No. 52 State, sec. 19-23s-20e. Drlg. sdy. L. 3,337 ft.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 19 Sch. Ld., sec. 16-14s-13w. Drlg. sd.&L. 4,910 ft.

Charenton—St. Mary Parish

Pan American Prod. Co. No. 1 Dolph, sec. 36-13s-9e. T.D. 7,185 ft.; 7-in. csg. 6,904 ft.; perf. 6,840-75 ft.; swbd. S.W.; cutting lnr.
Pan American Prod. Co. No. 1 Eucer, sec. 11-13s-9e. R.U.
Pan American Ref. Co. No. 4 Laws Realty Co., sec. 30-13s-10e. T.D. 10,066 ft.; P.B. 7,180 ft.; perf. 7,120-50 ft.; squeezed off perf.; reperf. 7,168-78 ft.; tstg.
Pan American Prod. Co. No. 2 South Coast Corp., sec. 31-13s-9w. T.D. 7,228 ft.; 7-in. csg. 6,556 ft.; comp.; no gauge.

Choctaw—Iberville Parish

Standard Oil Co. No. 10 Grove, sec. 52-9s-11e. T.D. 5,303 ft. in salt; D.S. stck. P.B. 4,650 ft.; T.D. 5,075 ft.; sdtrkd. while rmg.; drlg. rk. 5,012 ft.
Louisiana Crusader Oil Co. No. 1 E. R. Schwing, sec. 29-8s-11e. Loc.

Darrow—Ascension Parish

Humble O. & R. Co. No. 16 Community, sec. 29-10s-2e. Drlg. sh. 4,996 ft.
Kiva Oil Co. No. 1 Duplessis, sec. 69-10s-2w. R.U.

Dog Lake—Terrebonne Parish

Texas Co. No. 18 State, sec. 5-22s-16e. T.D. 7,606 ft.; P.B. 1,564 ft.; drlg. oil sd. 5,994 ft.
Texas Co. No. 20 State, sec. 5-22s-16e. T.D. 6,850 ft.; 7-in. csg. 6,825 ft.

Edgerly—Calcasieu Parish

Crusader Pet., Inc., No. 1 Miller Bros., sec. 27-9s-11w. 7-in. csg. 6,078 ft.; T.D. 6,523 ft.; rmg.

Four Isle—Terrebonne Parish

Texas Co. No. 9 L.L.&E., sec. 24-21s-16e. Drlg. sdy. sh. 8,325 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 24 State, sec. 37-23s-33e. T.D. 5,596 ft.; salt; P.B. 3,464 ft.; drlg. cmt. 3,100 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 7 Kaufman, sec. 13-9s-8w. T.D. 7,079 ft.; 5-in. csg. 7,052 ft.; swbd. S.W.; P. B. 6,898 ft.; swbd. S.W.; fsg. for screen.
Union Sulphur Co. No. 2 Mary McIvor, sec. 14-9s-8w. Drlg. sh.&L. 3,885 ft.

Hackberry—Cameron Parish

W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
W. T. Burton No. 1 Porter Ellender, sec. 27-12s-10w. T.D. 5,578 ft.; rng. 7-in. csg.
M. P. O'Meara No. 1 Rigmaden heirs, sec. 22-12s-10w. Drlg.
Stanolind O. & G. Co. No. 6 Duhon, sec. 22-12s-10w. T.D. 4,255 ft.; rmg.
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. Drlg.
Stanolind O. & G. Co. No. 11 Carter & Sweeney, sec. 22-12s-10w. 10¾-in. csg. 1,451 ft.; T.D. 3,942 ft.; 7-in. csg. 3,898 ft.; I.P. 128 B.P.D.; ¼-in. ck.
Stanolind O. & G. Co. No. 7 Duhon, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 26 Gulf Ld., sec. 22-12s-10w. 10¾-in. csg. 1,644 ft.; core sd. 4,183 ft.
Stanolind O. & G. Co. No. 27 Gulf Ld., sec. 22-12s-10w. Bldg. drk.
Stanolind O. & G. Co. No. 53 State, sec. 22-12s-10w. 10¾-in. 1,930 ft.; T.D. 6,648 ft.; P.B. 4,080 ft.; T.D. 5,880 ft.; 7-in. csg. 5,840 ft.; I.P. 281 B.P.D.
Texas Co. No. 23-B State, sec. 12-12s-9w T.D. 5,448 ft.; P.B. 2,409 ft.; T.D. 7,274 ft.; P.B. to sdtrk.; drlg. sd. in sdtrkd. hole 6,934 ft.

Lockport-Cameron Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. T.D. 5,531 ft.; reaming.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Banta, sec. 40-13s-9e. Set 7-in. csg. 9,768 ft.; T.D. 10,480 ft.; perf. 10,412-24 ft.; I.P. 225 bbls. net oil, 15% S.W. per day.
Herton Oil Co. No. 1 Teche Sugar Co., sec. 58-13s-8e. Loc.

Jennings—Acadia Parish

Frank W. Bennett et al No. 1 Brethern and Christ Church, sec. 41-7s-2w. T.D. 7,107 ft.; D.S. stuck; shot; fsg.
W. T. Burton No. 4 Roboria, sec. 41-9s-3w. Drlg. sdy. L. 5,280 ft.
Crusader Pet., Inc., No. 1 E. H. Grace, sec. 45-9s-2w. Drlg. sdy. sh. 2,931 ft.
Glassell & Glassell No. 2 McFarland, sec. 41-9s-2w. Drlg. sh. 6,155 ft.
Glassell & Glassell No. 3 McFarlain, sec. 41-9s-3w. T.D. 7,112 ft.; 7-in. csg. 6,898 ft.; I.P. 650 B.P.D.; 12/64-in. ck.
Glassell & Glassell No. 4 Trushell, sec. 42-9s-3w. Drlg. 50 ft.
Gulf Ref. Co. No. 39 Arnaudit, sec. 47-9s-2w. R.U.
Jolly Pet. Co. No. 2 McFarlain, sec. 41-9s-2w. Bldg. drk.
Ladak Oil Co. No. 2 Jennings-Clement, sec. 46-9s-2w. Core sd. 1,870 ft.
M. P. O'Meara No. 1 Moresi, sec. 41-9s-2w. Drk.
Jolly Pet. Co. No. 5 Jennings-Haywood, sec. 46-9s-2w. Drk.
Reiter Foster Oil Co. No. 2 Crusel, sec. 42-9s-2w. Drlg. S.W. sd. 3,505 ft.
Shell Pet. Corp. No. 3 Community, sec. 40-9s-2w. Drlg. sh. 2,915 ft.
Stanolind O. & G. Co. No. 19 Houssiere-Latrelle, sec. 47-9s-2w. Drlg. sh.&bldrs. 2,542 ft.
Superior Oil Co. No. 8 Leckelt, sec. 42-9s-2w. Drlg. sd. 5,105 ft.
Superior Oil Co. No. 7 Leckelt, sec. 42-9s-2w. Drlg. sd. 4,738 ft.
Superior Oil Co. No. 4 Jennings-Haywood, sec. 41-9s-2w. Drlg. sh. 6,125 ft.
Superior Oil Co. No. 3 Moresi, sec. 41-9s-2w. T.D. 6,748 ft.; stuck D.S.; sdtrkg. 5,038 ft.; drlg. sh. 5,644 ft.

Lafitte—Jefferson Parish

Texas Co. No. 7 L.L.E., sec. 20-17s-24w. Drlg. sh.&L. 8,500 ft.
Texas Co. No. 2 Milling, sec. 20-17s-24e. T.D. 10,120 ft.; 7⅝-in. csg. 10,120 ft.; P.B. 10,050 ft.; perf. 10,018-54 ft.; I.P. 1,754 B.P.D.; ⅝-in. ck.
Texas Co. No. 8 Rigolet, sec. 29-17s-24e. Loc.
Texas Co. No. 1 State-Bayou Normar, sec. 28-17s-24e. T.D. 12,115 ft.; D.S. stuck.

Lake Barre—Terrebonne Parish

Texas Co. No. 141 State, sec. 40-21s-19e. S.D. 3,744 ft.; sdtrkd.; T.D. 3,641 ft.; make D.S.T.

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 7 Lafourche, sec. 18-18s-25e. Sdy. sh. showing oil; 7-in. csg. 8,074 ft.; tstd. S.W.; cg. sd. S. O. 8,144 ft.

Lake Pelto—Terrebonne Parish

Texas Co. No. 13 State, sec. 8-23s-18e. Drlg. sdy. sh. 5,794 ft.

Lake Washington—Plaquemines Parish

Humble O. & R. Co. No. 25 Cockrell, sec. 35-20-26e. T.D. 6,357 ft.; rmg.

Lockport—Calcasieu Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. T.D. 5,531 ft.; tstd. S.W. on D. S.T.

Lake Long—Lafourche Parish

Fohs Oil Co. No. 2 State, sec. 65-17s-19e. R.U.
Fohs Oil Co. No. 3 State, sec. 65-17s-19e. 10¾-in. csg. 2,743 ft.; core sh. 9,395 ft.

New Iberia—Iberia Parish

Wm. Hellis No. 3 Schwing, sec. 57-12s-7e. T.D. 5,019 ft.; P.B. and sdtrkd.; salt 5,509 ft.; P.B. 2,650 ft.; T.D. 3,949 ft.; 7-in. csg. 3,920 ft.; drlg. L. 4,524 ft.
Texas Co. No. 3 Bryant, sec. 25-12s-7e. R.U.
Wm. Hellis No. 9 Bernard, sec. 54-12s-7e T.D. salt 5,171 ft.; P.B. and sdtrkd.; drlg. sd.&sh. 4,538 ft.
Wm. Hellis No. 10 Bernard, sec. 54-12s-7e. R.U.
Wm. Hellis No. 11 Bernard, sec. 54-12s-7e. Drlg. rk. 3,702 ft.
Wm. Hellis No. 6 Bullock-Burke, sec. 25-12s-7e. T.D. 4,817 ft.; P.B. and sdtrkd.; T.D. 4,769 ft.; P.B. 2,700 ft.; drlg. sdy. L. 4,243 ft.
Texas Co. No. 1 Burke, sec. 56-12s-8e. R.U.
Texas Co. No. 4 Duke, sec. 26-2s-7e. Drlg. sdy. sh. 4,256 ft.
Texas Co. No. 7-B Hanzen, sec. 54-12s-7e. T.D. 4,546 ft.; P.B. 3,825 ft.; sdtrkd. T.D. 4,791 ft.; 7-in. csg. 4,772 ft.; I.P. 288 B.P.D.; ¼-in. ck.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 1 Antonohlenforst, sec. 45-8s-1e. T.D. 8,117 ft.; S.O. and S.W. on D.S.T.; run 7-in. csg. to test.
Humble O. & R. Co. No. 1 Habetz, sec. 3-9s-1e. R.U.R.
Humble O. & R. Co. No. 1 L. Laumbrechet, sec. 4-9s-1e. Loc.

Roanoke—Jeff Davis Parish

Humble O. & R. Co. No. 9-B Devilbiss, sec. 11-9s-4w. Drlg. sh. 2,995 ft.
Humble O. & R. Co. No. 4 Taylor, sec. 72-9s-4w. T.D. 8,848 ft.; 7-in. csg. 8,847 ft.; I.P. 24 B.P.H.; ¾-in. ck.

Sorrento—Ascension Parish

Sorrento Oil Co. No. 1 L. L. Barnard et al, sec. 16-10s-4e. R.U.

South Elton—Jeff Davis Parish

Stanolind O. & G. Co.-Amerada Pet. Corp. No. 3-B Calcasieu Natl. Bank, sec. 27 7s-3w. R.U.

South Jennings—Jeff Davis Parish

Loffland Bros. No. 1 Fontenot, sec. 16-10s-3w. Drlg. L. 8,083 ft.

Starks—Calcasieu Parish

Capital Oil Co. No. 1 Lutcher-Moore, sec. 24-9s-13w. R.U.
Lutcher Moore No. 3 fee, sec. 19-8s-12w. Drlg. 1,000 ft.
Turnbull et al No. 2 Industrial Lbr. Co sec. 19-9s-12w. T.D. 4,861 ft.; perf. csg. 4,508-18 ft.; squeezed off perf.; prep. to D.D.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 852 fee, sec. 29-9s-10w. R.U.R.
Union Sulphur Co. No. 847 fee, sec. 29-9s-10w. T.D. 5,570 ft.; 7-in. csg. 5,570 ft.; sanded up; P.B. 4,064 ft.; T.D. 5,132 ft. in sdtrkd. hole; I.P. 242 B.P.D.; ⅞-in. ck.
Union Sulphur Co. No. 849 fee, sec. 29-9s-10w. T.D. 5,104 ft.; 7-in. 5,089 ft.; failed to flow; R.U. to P.
Union Sulphur Co. No. 851 fee, sec. 29-9s-10w. Spd.

St. Martinsville—St. Martin Parish

Tide Water Oil Co. No. 1-B Smedes, sec. 18-11s-6e. Drlg. sdy. sh. 8,390 ft.

Valentine—Lafourche Parish

Pan American Prod. Co. No. 9-A Harang, sec. 8-17s-20e. T.D. 5,403 ft.; 7-in. csg. 5,363 ft.; I.P. 593 B.P.D.; ¾-in. ck.
Pan American Prod. Co. No. 10 Harang, sec. 7-17s-20e. T.D. 6,977 ft.; P.B. 3,000 ft.; drlg. sh. in sdtrkd. hole 8,313 ft.
Pan American Prod. Co. No. 12 Harang, sec. 7-17s-20e. R.U.
Pan American Prod. Co. No. 13 Harang, sec. 8-17s-20e. R.U.

Venice—Plaquemines Parish

Tide Water Oil Co. No. 4 Manhattan Fruit Co., sec. 26-21s-30e. Drlg. L. 5,800 ft.

Vinton—Calcasieu Parish

Katina Oil Co. No. 2 Vincent, sec. 34-10s-12w. T.D. 4,140 ft.; sdtrkd.; T.D. 3,215 ft.; 7-in. csg. 3,215 ft.
Superior Oil Co. No. 1 Gray, sec. 4-11s-12w. 7⅝-in. csg. 3,907 ft.; drlg. sd.&sh. 6,256 ft.
Vinton Pet. Co. No. 23 Vincent, sec. 34-10s-12w. T.D. 3,256 ft.; 5-in. csg. 3,256 ft.

White Castle—Iberville Parish

T. D. Humphray No. 1 E. B. Adams, sec. 1-11s-12e. S.D. 6,067 ft.; P.B. and sdrkd.; drlg. sh. 3,750 ft.
Shell Pet. Corp. No. 5 Shingle, sec. 12-11s-12e. 10¾-in. csg. 1,400 ft.; T.D. 6,447 ft.; make D.S.T.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w. T.D. 5,106 ft.; P.B. to approx. 500 ft.; to sdtrk.
Gulf Oil Corp. No. 1 Euclia Broussard, sec. 49-10s-2w. Drlg. sh. 6,690 ft.
Humble O. & R. Co. No. 1 R. A. Sarver, sec. 35-10s-1e. T.D. 9,526 ft.; rmg.
Magnolia Pet. Co. No. 1 Duson, sec. 14-8s-2w. T.D. 6,944 ft.; rmg.
I. S. Markley No. 1 Daigle, sec. 19-7s-2e. T.D. 6,914 ft.; fsg.

Calcasieu Parish

D. & D. Oil Co. No. 2 Lutcher-Moore, sec. 1-8s-13w. T.D. 8,340 ft.; run 9⅝-in. csg drlg. plug; csg. collspd.; core sh. 8,413 ft.
Federal Pet. Co. No. 1 Sabine Tram Co., sec. 25-18s-14w. 10¾-in. csg. 1,981 ft.; W.O.C.
Union Sulphur Co. No. 1 J. A. Bel, sec. 10-10s-10w. 10¾-in. csg. 1,216 ft.; drlg sdy. sh. 5,888 ft.
Wheeler Oil Corp. No. 2 Sch. Ld., sec. 16-9s-9w. R.U.

Cameron Parish

Humble O. & R. Co. No. 1 Miami Corp., sec. 8-14s-5w. 20-in. pipe set 188 ft., drlg. sh. 5,538 ft.

Cameron Parish—Gulf of Mexico

Superior Oil Prod. Co. et al No. 1 State Gulf of Mexico, 3,800 ft. W, 6,200 ft. S of SE cor. of irregular sec. 4-15s-8w. 10¾-in. csg. 1,157 ft.; drlg. sd.&sh. 2,482 ft.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Elliott, sec. 3-6s-2e. T.D. 6,127 ft.; D.S. stuck.

Evangeline Parish

Schlicher Prod. Co. No. 1 J. A. Perkins, sec. 35. Drlg. sh. 1,800 ft.

Iberia Parish

Texas Co No. 2-B Vermilion Bay, sec. 20 16s-5e. Drlg. sdy. sh. 6,726 ft.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 12s 12s-11e. T.D. 3,752 ft.; D.S. stuck.

Jefferson Davis Parish

Continental Oil Co. No. 1 Faye, sec. 31-10s-3w. Drlg. 1,090 ft.
Humble O. & R. Co. No. 1 T. S. Stegall, sec. 20-9s-5w. R.U.R.
Union Sulphur Co. No. 1 Calcasieu National Bank, sec. 12-9s-6w. Drlg. sdy. sh. 6,207 ft.

Lafourche Parish

Amerada Pet. Corp. No. 1 South Coast Corp., sec. 34-15s-19e. Core sh. 8,634 ft.
Gulf Oil Corp. No. 3 State P.P., sec. 36 23s-21e. Recvd. 1,000 ft. of oil on 6-min D.S.T. at 6,749-6,846 ft.; 9⅝-in. csg 6,832 ft.; drlg. 7,121 ft.; rec. 2,000 ft. P.L.O. on D.S.T. 6,958-70 ft.; T.D. 7,28[illegible] ft.; P.B. 6,971 ft.; top salt 7,741 ft.; S.D. in salt 7,757 ft.; W.O.
Wm. Helis No. 2 City of New Orleans sec. 19-23s-23e. 10¾-in. csg. 2,646 ft.

Plaquemines Parish

Gulf Oil Corp. No. 3 State (Jackson dist.) Drlg. sdy. sh. 7,551 ft.
Humble O. & R. Co. No. 9 Orleans Levee Bd., sec. 12-18s-15e. Cg. gypsum 1,085 ft.; no report.

St. Bernard Parish

Shell Pet. Corp. No. 1 Unit, sec. 11-14s-12e. M.I.
Southern Sulphur Co. No. 2 State Lake Borgne, sec. 38-14s-15e. 13⅜-in. csg. 30 ft.; S.D.; 3,440 ft.; washing to bttm. to core deeper.
Texas Co. No. 4 State, sec. 14-10s-9e. Drive piling.

St. Martin Parish

Texas Co. No. 10 St. Martin, sec. 15-8s-7e. Drlg. sh.&sd. 7,308 ft.

St. Mary Parish

Shell Pet. Corp. No. 1 Barbour, sec. 21-15s-12e. Bldg. drk.
Texas Co. No. 1 State-Bateman Lake, sec. 21-16s-12e. 7⅝-in. csg. 10,515 ft.; T.D. 11,808 ft.; in soft formation; losing returns; mixing mud.

Terrebonne Parish

Barnsdall Oil Co. No. 1 Dilbert, Stark & Brown Sur., sec. 10-16s-15e. Drlg. sdy. sh. 7,248 ft.

Vernon Parish

Castor Creek Drlg. Co. No. 1 Llano Del Rio, Inc., sec. 34-2n-9w. Drk.

ARKANSAS

Columbia County

E. O. Olds No. 1 Dennis, NE SE SW sec. 4-17-21. Drlg. 2,050 ft.
Standard of La. No. 1 J. P. McKean SW sec. 8-16s-22w. Flw. 13 B.P.H.; tstg.; T.D. 7,204 ft.
Tide Water-Seaboard Oil Co. No. 1 Crumpler, SW NE SW sec. 24-17-19w. Cg. 5,679 ft.

Hempstead County

H. D. Easton et al No. 1 R. M. LaGrone sec. 5-12-26. Will whipstock; T.D. 2,940 ft.

Miller County—Rodessa

F. W. Burford No. 3 Ahern, sec. 10-20-28. 7-in. cmtd. 6,028 ft.; T.D. 6,088 ft.
Anding & Bird No. 4 Skipper, SW NW SW sec. 11-20-28. Drlg. 5,970 ft.
F. W. Burford No. 4 Ahren, SE SE SW sec. 10-20-28. Drlg. 3,905 ft.
F. W. Burford No. 1-E A. A. Capps, sec. 13-20-28. Drlg. 5,257 ft.
F. W. Burford No. 1-F A. A. Capps, sec. 12-20-28. 7-in. cmtd. 5,986 ft.; T.D. 6,080 ft.
F. W. Burford No. 1 A. J. Cross, E½ SE NE sec. 11-20-28. 7-in. 6,054 ft.; T.D. 6,120 ft.
F. W. Burford No. 1 August, S½ SE SW sec. 8-20-27. Comp.; flw. 50 B.P.D.; T. D. 6,164 ft.
F. W. Burford No. 1-A J. O. Gerrald, NE cor. sec. 15-20-28. Drlg. 4,125 ft.
F. W. Buford No. 2-B G. G. Gerrald, sec. 15-20-28. Drlg. 5,917 ft.
G. C. Grasty No. 1 Treadway, SW SE NE sec. 10-20-28. Drlg. 5,185 ft.
H. L. Hunt No. 3 Womack, NW SW SE sec. 10-20-28. 7-in. 6,056 ft.; T.D. 6,075 ft.
H. L. Hunt No. 4 Womack, NE SE SE sec. 10-20-28. Drlg. 5,298 ft.
H. L. Hunt No. 5 Womack, SW SW SE sec. 10-20-28. Drlg. 3,000 ft.
Kroll & Travis No. 1 Dickson, SW SE NW sec. 11-20-28. Drlg. 6,109 ft.
Rodger Lacy No. 1 Sartor, SE W½ sec. 15-20-28. Drlg. 750 ft.

W. M. Layton No. 3 Terry, SE W½ W½ sec. 14-20-28. Drlg. 1,865 ft.

R. H. Long No. 1 Greer, SW NE SE sec. 10-20-28. T.D. 6,118 ft.; prep. rng. csg.

McClanahan et al No. 3 Capps, sec. 11-20-28. Comp.; flw. 1,204 bbls. in 17 hrs.; T.D. 6,050 ft.

McClanahan et al No. 4 Capps, NE NE SW sec. 11-20-28. Drlg. 5,905 ft.

McClanahan et al No. 1 J. P. Greer, SE SW NW sec. 11-20-28. 7-in. 6,115 ft.; T.D. 6,195 ft.

McClanahan No. 1 T. J. Hopkins, SE SW NE sec. 11-20-28. Drlg. 2,905 ft.

McClanahan et al No. 2 T. J. Hopkins, C sec. 11-20-28. R.U.

McMurray No. 1-A Thomas, NW E½ W½ sec. 13-20-28. 16-in. 145 ft.

McMurray No. 2-B Thomas, SW SW SE sec. 12-20-28. 10-in. 145 ft.

J. R. Ostrom No. 1 J. O. Gerrald, NW E¼ sec. 15-20-28. Cg. 6,008 ft.

Parks et al No. 1 Gerrald, sec. 11-20-28. 13-in. 196 ft.

Skelly Oil Co. No. 1 Thomas, SW SE SW sec. 12-20-28. Drlg. 3,315 ft.

A. M. Sutton No. 1 Cross, SE cor. SE NE sec. 11-20-28. Drlg. 3,761 ft.

Texas Canadian Oil Co. No. 1 Dickson, SE NW sec. 11-20-28. Comp.; flw. 49 B.P.H.; T.D. 6,103 ft.

Miller County—Other

Odel Hinson No. 1 Montana Realty Co. O.W.D.D.; T.D. 5,235 ft.; washing to bttm.

Ouachita County

Copenhaven Oil Corp. No. 1 J. E. Evans, sec. 20-11-19. T.D. 1,728 ft.; D.&A.

O. F. Whittaker No. 1 C. C. Gutty, SW SE NW sec. 21-15-19w. T.D. 2,180 ft.; bld. dry.

Pulaski County

A. L. Kitselman No. 2 A. L. Kitselman, Jr., SE SE SW sec. 2-1s-13e. Cg. 1,336 ft.

Union County

Alice Sidney Oil Co. No. 2 Morgan, SE NE SE sec. 18-18-17. O.W.D.D.; drlg. 6,371 ft.

Union County—Schuler

E. M. Jones No. 2 Marine Oil Co., SW NW SE sec. 17-18-17. Drlg. 2,834 ft.

E. M. Jones No. 3 Marine Oil Co., NE NW SE sec. 17-18-17. Drlg.

E. M. Jones No. 4 Marine Oil Co., SE SW SE sec. 17-18-17. Drlg. 1,619 ft.

Lion Oil Ref. Co. No. 1 Marine Oil Co., NE SE SW sec. 17-18-17. R.U.

Lion Oil Ref. Co. No. 1-A Edna Morgan, O.W.D.D.; T.D. 7,683 ft.; flw. gas and dist.; tstg.

Lion Oil Ref. Co. No. 3-B Edna Morgan, NE NW SE sec. 18-18-17. R.U.

Phillips Pet. Co. No. 1 E. Gan, SW SE NE sec. 18-18-17. T.D. 6,062 ft.; O.W. D.D.; washing to bttm. preparatory to deepening.

TEXAS

Week Ending October 23

GULF COAST FIELDS

Hastings—Brazoria County

Humble O. & R. Co. No. 1-D W. F. Beers, Perry & Austin Sur. T.D. 6,080 ft.; 5½-in. csg. 5,990 ft.; I.P. 668 B.P.D.; ¼-in. ck.

Humble O. & R. Co. No. 3-D W. F. Beers, Perry & Austin Sur. R.U.

Humble O. & R. Co. No. 1 O'Day, H.T.&B. Sur. No. 28. T.D. 6,080 ft.; 5½-in. csg. 5,900 ft.

Humble O. & R. Co. No. 1 Phillips, Perry & Austin Sur. T.D. 6,080 ft.; I.P. 696 B.P.D.; ¼-in. ck.

Humble O. & R. Co. No. 8 South Texas Grain Co., Perry & Austin Sur. Drlg. sh. 1,229 ft.

Navarro Oil Co. No. 1-A Callahan, H.T.& B. Sur. No. 29. T.D. 6,101 ft.; I.P. 602 B.P.D.; ¼-in. ck.

Pearland Oil Co. No. 2 C. H. Alexander, H.T.&B. Sur. No. 26. Drlg. sh. 4,000 ft.

Producers Inv. Co. No. 2 Alexander, H. T.&B. Sur. No. 28. Cg. 5,600 ft.; no report.

Prod. Inv. Co. No. 4 Alexander, H.T.& B. Sur. No. 28. Drlg. sh. 3,712 ft.

Stanolind O. & G. Co. No. 6 Autrey, H.T. &B. Sur. No. 37. Drk.

Stanolind O. & G. Co. No. 4 Droegmeyer, H.T.&B. Sur. No. 36. R.U.

Stanolind O. & G. Co. No. 6 T. C. Edwards, Wm. Henry Sur. R.U.

Stanolind No. 6 Brown, H.T.&B. Sur. No. 29. R.U.

Stanolind O. & G. Co. No. 3-B W. H. Avitts, H.T.&B. Sur. Drk.

Stanolind O. & G. Co. No. 5 Blount, B T. Masterson Sur. T.D. 6,080 ft; 7-in. csg. 6,079 ft.; I.P. 431 B.P.D.; ¼-in. ck.

Stanolind O. & G. Co. No. 4 Condon, H. T.&B. Sur. No. 29. T.D. 5,710 ft.; 7-in. csg. 5,708 ft.; I.P. 319 bbls. in 18 hrs.; ¼-in. ck.

Stanolind O. & G. Co. No. 11-B Curkett, H.T.&B. Sur. No. 30. T.D. 6,079 ft.; I.P. 618 B.P.D.; ¼-in. ck.

Stanolind O. & G. Co. No. 15-B M. Curkett, H.T.&B. Sur. No. 30. T.D. 6,077 ft.; tstg.

Stanolind O. & G. Co. No. 2 Drury, H.T. &B. Sur. No. 29. T.D. 6,115 ft.; tstg.

Stanolind O. & G. Co. No. 14-B H. H. Ford, H.T.&B. Sur. No. 29. T.D. 5,480 ft.; I.P. 447 bbls. in 20 hrs.; ¼-in. ck.

Stanolind O. & G. Co. No. 2 Matushita, H. Stevens Sur. 10¾-in. csg. 1,227 ft.

Stanolind O. & G. Co. No. 3-C H. Moore, R. A. Magee Sur. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.

Stanolind O. & G. Co. No. 4-C Moore, R. A. Magee Sur. R.U.

Stanolind O. & G. Co. No. 1 Peck, H.T.& B. Sur. No. 37. Core sd. 6,073 ft.

Stanolind O. & G. Co. No. 1 Remley, H. T.&B. Sur. No. 28. Drlg. sh. 4,884 ft.

Stanolind O. & G. Co. No. 1 J. H. Sparks, H.T.&B. Sur. No. 29. T.D. 5,550 ft.; run 7-in. csg.; I.P. 319 bbls. in 12 hrs.; ¼-in. ck.

Stanolind O. & G. Co. No. 2 W. B. Thornton, H.T.&B. Sur. No. 29. T.D. 5,890 ft.; perf. csg. to test; I.P. 675 B.P.D.; ¾-in. ck.

Stanolind O. & G. Co. No. 13 B. L. Turner, A.C.H.&B. Sur. T.D. 6,080 ft.; tstg.

Stanolind O. & G. Co. No. 14 Turner, A. C.H.&B. Sur. No. 1. T.D. 6,080 ft.; W. O.C.

Stanolind O. & G. Co. No. 16 Turner, A. C.H.&B. Sur. No. 1. T.D. 6,080 ft.; I.P. 338 bbls. in 15 hrs.; ¼-in. ck.

Stanolind O. & G. Co. No. 17 Turner, A. C.H.&B. Sur. No. 1. Drlg. sh. 4,813 ft.

Stanolind O. & G. Co. No. 2 Wagner, T.D. 5,700 ft.; 7-in. csg. 5,697 ft.

R. M. Stevens et al No. 1 Barnes, W. D. C. Hall Sur. R.U.

Lockridge—Brazoria County

Gulf Oil Corp. No. 4 Carrie Baker, J. W. Hall Sur. 10¾-in. csg. 1,332 ft.

Gulf Oil Corp. No. 1 Great Southern, E D. Robertson Sur. 9⅝-in. csg. 7,145 ft.; drlg. sd. 7,777 ft.

Kirby Pet. Co. No. 2 Carrie Baker, J. W. Hall Sur. 10¾-in. csg. 1,400 ft.; T.D. 6,367 ft.

McCurdy and Johnson No. 1 State, Brazos River. Drlg. sd. 5,457 ft.

Shell Pet. Corp. No. 2-B Ramsey, J. W. Hall Sur. Drlg. sh. 5,662 ft.

Shell Pet. Corp. No. 4 Ramsey, J. W Hall Sur. T.D. 6,373 ft.; W.O.C.

Manvel—Brazoria County

Texas Co. No. 26 Houston Oil Field Assn., A.C.H.&B. Sur. No. 91. T.D. 5,680 ft.; I.P. 540 B.P.D.; ¼-in. ck.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 2 Armstrong, Polly & Chance Sur. R.U.

Harrison & Abercrombie No. 1 Land and Barnes, C. Breen Sur. Drlg. sh. 7,212 ft.

Harrison & Abercrombie No. 1 Smith, C. Breen Sur. 9⅝-in. csg. 7,016 ft.; core hd. sd.&sh. 10,397 ft.

Pledger—Brazoria County

Humble O. & R. Co. No. 1 Norton, Gray & Moore Sur. Drlg. sh. 3,886 ft.

Sandy Point—Brazoria County

H. J. DeArman No. 1 Edmundson, D. Talley Sur. T.D. 6,606 ft.; 7-in. csg. on bttm.; waiting comp. of No. 3 Fite.

H. J. DeArman No. 3 Fite, D. Talley Sur. T.D. 6,520 ft.; tstd. S.W.; prep. to deepen.

Stanolind O. & G. Co. No. 2 Fite, D. Talley Sur. 9⅝-in. csg. 995 ft.; drlg. sh. 3,864 ft.

West Columbia—Brazoria County

Texas Co. No. 17 Abrams, Geo. Tennille Sur. Drlg. L. 3,346 ft.

Texas Co. No. 1 Gulf Oil Corp. fee, G. Tennille Sur. T.D. 5,483 ft.; I.P. 556 B. P.D.; ¼-in. ck.

Texas Co. No. 2 T. L. Smith, Geo. Tennille Sur. Drlg. sdy. sh. 1,864 ft.

Texas Co. No. 87 Hogg, Tennille Lge. Drlg. sh. 4,530 ft.

Texas Co. No. 3 Phillips, G. Tennille Sur T.D. 5,800 ft.; P.B. 5,670 ft.; 7-in. csg. 5,577 ft.; I.P. 237 B.P.D.; ¼-in. ck.

Texas Co.-Sterling O. & R. Co. No. 4 Phillips, Geo. Tennille Sur. 10-in. csg. 1,195 ft.; W.O.C.

Calhoun—Heyser—Victoria County

Blanco Oil Co.-Buchanan No. 2 Dunn-Woody, A. Sisneros Sur. T.D. 5,600 ft.; run csg.

Blanco Oil Co.-Buchannan No. 3 C. S. Dunnwoody, A. Sisneros Sur. Drk.

Geo. Echols No. 1 W. H. Bennett, J. Galban Sur. 10¾-in. csg. 915 ft.; core sh. 5,580 ft.

Geo. H. Echols No. 7 W. H. Bennett, J. E. Galban Sur. R.U.

George Echols No. 2 Lander, J. Galban Sur. T.D. 5,746 ft.; I.P. 5½ B.P.H.; ⅛-in. ck.

Gulf Oil Corp. No. 1 Schultz, J. F. Galban Sur. T.D. 5,486 ft.; I.P. 21 B.P.H.; ¼-in. ck.

Gulf Oil Corp. No. 1 T. P. Traylor, J. E. Galban Sur. 7-in. csg. 5,580 ft.; T.D. 5,780 ft.; run Schlumberger.

Humble O. & R. Co. No. 4 H. T. Marshall, A. Sisneros Sur. 10¾-in. csg. 1,430 ft.

Humble O. & R. Co. No. 16-B P. H. Welder, A. Sisneros Sur. T.D. 5,597 ft.; 5½-in. csg; P.B. 5,500 ft.; perf. csg. 5,483-87 ft.; made squeeze job; perf. 5,485-87 ft.; I.P. 292 B.P.D.; ⅞-in. ck.

Humble Oil-Plymouth Oil Co. No. 17-B Welder, A. Sisneros Sur. Drlg. sh. 2,000 ft.

Humble O. & R. Co. No. 18-B P. H. Welder, A. Sisneros Sur. R.U.

Magnolia Pet. Co. No. 3 O. M. Lander, J. E. Galban Sur. Loc.

Magnolia Pet. Co. No. 4 Lander, J. Galban Sur. Drlg. sh. 5,300 ft.

Normandie Oil Co. No. 7 J. G. Cook, A. Sisneros Sur. T.D. 5,755 ft.; salt wtr. sd.; P.B. 5,587 ft.; W.O.

Normandie Oil Co. No. 8 J. G. Cook, A. Sisneros Sur. R.U.

Portilla Drlg. Co. No. 10-C P. H. Welder, A. Sisneros Sur. T.D. 1,048 ft.; W.O.C.

Sun Oil Co. No. 3 W. N. Coffey, J. Galban Sur. Core 5,600 ft.

Anahuac—Chambers County

Humble O. & R. Co. No. 5 Boyt, sec. 44, H.&T.C. Sur. Drlg. sh. 2,168 ft.

Humble O. & R. Co. No. 4 Broussard, sec. 63, H.&T.C. Sur. T.D. 7,204 ft.; P.B. 7,104 ft.; 5½-in. csg. 7,060 ft.

Cotton Lake—Chambers County

Humble O. & R. Co. No. 1 Casey, S. Barrow Sur. Drlg. sh. 3,462 ft.

Texas Crusader Oil Co. No. 9 Kilgore, J. Townsend Sur. T.D. 6,290 ft.; 7-in. csg. 6,282 ft.; flwd. oil and S.W.; P.B.; W.O.C.

Seabreeze—Chambers County

Sun Oil Co. No. 3 Acorn, H.T.&B. Sur. 103. 13¾-in. csg. 1,393 ft.; T.D. 8,494 ft.; cmtd. 9⅝-in. csg. on bttm.; T.D. 8,822 ft.; set retainer at 8,473 ft.; run 5-in. csg.

Sun Oil Co. No. 1 Jackson, Yarbo Sur. T.D. 8,830 ft.; 5-in. csg. 8,805 ft.; set screen; swbd. S.W.; cemented back to 7,663 ft.; abd.

Turtle Bay—Chambers County

Stanolind O. & G. Co. No. 3 Cooper, S. Burney Sur. T.D. 6,608 ft.; 7-in. csg. 6,590 ft.; W.O.C.

Stanolind O. & G. Co. No. 3 Silva, S. Burney Sur. T.D. 6,595 ft.; I.P. 475 bbls. in 22 hrs.; ¼-in. ck.

Orchard—Fort Bend County

Gulf Oil Corp. No. 53 Moore, J. Frazier Sur. Drlg. sh. 5,217 ft.; no report.

Gulf Oil Corp. No. 55 J. M. Moore, J. Frazier Sur. R.U.

Dickinson—Galveston County

Atlantic Ref. Co. No. 3 Lippman, W. G. Banks Sur. R.U.

Atlantic Ref. Co. No. 4 Sealy Hutchins, P. G. Merritt Sur. T.D. 8,074 ft.; W.O.C.

Frank Bennett No. 3 Way, P. G. Merritt Sur. R.U.

Coast Pet. Co. No. 8 Stewart, W. K. Wilson Sur. Spd.

J. K. Hughes Oil Co. No. 1 J. C. Ecret, W. K. Wilson Sur. Spd.

Humble O. & R. Co. No. 1 M. H. Kreisle, W. K. Wilson Sur. Drk.

Humble O. & R. Co. No. 5-A Stewart, W. K. Wilson Sur. Drlg. sdy. sh. 8,727 ft.

Pure Oil Co. No. 2-A Sealy Hutchins, P. G. Merritt Sur. Drlg. sh. 3,618 ft.

Pure Oil Co. No. 1 Sam Levine, W. G. Banks Sur. Drlg. sh. 6,646 ft.

Stanolind O. & G. Co. No. 4 Damiani, W. K. Wilson Sur. 16-in. csg. 300 ft.

High Island—Galveston County

Stanolind O. & G. Co. No. 10 B.&O., M. Dunman Sur. 10¾-in. csg. 1,315 ft.; drlg. sd.&sh. 6,953 ft.

Stanolind O. & G. Co. No. 63 Cade, M. Dunman Sur. 10¾-in. csg. 1,311 ft.; drlg. sh.&L. 5,368 ft.

Hitchcock—Galveston County

N. W. Hunter No. 1 Stewart Title Guaranty Co., J. D. Moore Sur. T.D. 5,276 ft.; run Schlumberger; abd.

Merit Oil Co. No. 1 Stewart, J. B. Moore Sur. 10¾-in. csg. 1,075 ft.; T.D. 6,191 ft.; abd.

Silsbee—Hardin County

Republic Prod. Co.-Houston Oil Co. No. 22 Brooks, G. W. Brooks Sur. T.D. 6,920 ft.; 7-in. csg. 6,915 ft.; showed S.W.; P.B. 6,903 ft.; perf. 6,910-13 ft.; I.P. 275 B.P.D.; ¼-in. ck.

Republic Prod. Co.-Houston Oil Co. No. 23. G. W. Brooks Sur. T.D. 6,910 ft. 7-in. csg. 6,897 ft.; I.P. 442 B.P.D.; ¼-in. ck.

Republic Prod. Co.-Houston Oil Co. No. 24 Brooks, G. W. Brooks Sur. Drlg. sh. 2,410 ft.

Fairbanks—Harris County

Amerada-Stanolind O. & G. Co. No. 3 Carpenter, F. Fry Sur. Drlg. sh. 3,775 ft.

Clinton—Harris County

Stanolind O. & G. Co. No. 1 M. E. Oates. Reels & Trobough Sur. R.U.

Friendswood—Harris County

Humble O. & R. Co. No. 3 Beamer, T. Choate Sur. Top sd. 5,706 ft.; T.D. 5,940 ft.; 5½-in. csg. 5,700 ft.

Humble O. & R. Co. No. 1 Kiesling, T. Choate Sur. R.U.

National Standard Oil Co. No. 1 Coward, Perry & Austin Sur. Loc.

Humble—Harris County

John Deering No. 1 Wm. Lee, E. Rhule Sur., 5,000-ft. test. T.D. 5,440 ft.; fsg.

Mykawa—Harris County

H. C. Cockburn No. 2 Minnetex. Wm. Lovett Sur. Loc.

South Houston—Harris County

Stanolind O. & G. Co. No. 2 H. L. Bennett et al, Unit 13, H.T.&B. Sur. No. 6. T.D. 4,068 ft.; 5¾-in. csg. 4,051 ft.; P.B. 3,900 ft.; P. B. 1,561 ft.; T.D. 4,019 ft., 5¾-in. csg. 4,003 ft.; I. . 157 B.P.D.; ¼-in. ck.

Tomball—Harris County

Humble O. & R. Co. No. 1 Osborne, R. Hubbard Sur. R.U.

Humble O. & R. Co. No. 2 Rudel, J. Pruitt Sur. R.U.

Humble O. & R. Co. No. 1-B W. B. Sherrer, J. House Sur. Drlg. sh.&L. 5,440 ft.

Humble O. & R. Co. No. 2 N. W. Stehly, J. Pruitt Sur. T.D. 5,587 ft.; 5½-in. csg. 5,587 ft.

Shell Pet. Corp. No. 1 Stokely, J. S. Smith Sur. Drlg. sh. 1,750 ft.

Texas Co. No. 4 Sam Lewis, J. Pruitt Sur. T.D. 5,552 ft.; P.B. 2,850 ft.; T.D. 5,594 ft.; perf. csg. 5,562-67 ft.; came in as gas well.

Ganado—Jackson County

Texas Co. No. 1 Mortg. Ld. & Inv. Co., Morris & Cummins Sur. No. 3. Drlg. 1,867 ft.

Amelia—Jefferson County

Humble O. & R. Co. No. 10 Crook, C. Williams Sur. R.U.

Humble O. & R. Co. No. 5 Fitzgerald, C. Williams Sur. T.D. 6,776 ft.; 5½-in. csg. 6,770 ft.

Humble O. & R. Co. No. 1 S. L. Guinn, C. Williams Sur. R.U.

Humble O. & R. Co. No. 12 Guinn, C. Williams Sur. Drk.

Humble O. & R. Co. No. 12 Phelan, C. Williams Sur. Drk.

Humble O. & R. Co. No. 2-C Pinchback, C. Williams Sur. R.U.

Humble O. & R. No. 2-D Pinchback, C. Williams Sur. Loc.

Glenn H. McCarthy No. 3-B Longe, H. Williams Sur. T.D. 6,092 ft.; comp.; no gauge.

Stanolind O. & G. Co. No. 1 Keith, H. Williams Sur. Drlg. sh.&sd. 4,963 ft.

Stanolind O. & G. Co. No. 7 McCormick, H. Williams Sur. Drlg. sh.&shl. 5,066 ft.

Stanolind O. & G. Co. No. 8 McCormick, H. Williams Sur. Drlg. sd. 993 ft.

Sun Oil Co. No. 1 W. D. Gordon, A. Houston Sur. Drlg. sh. 2,191 ft.

Big Hill—Jefferson County

Stanolind O. & G. Co. No. 2 May Fitzhugh, Wm. McFadden Sur. T.D. 4,047 ft.; 10¾-in. csg. 4,040 ft.; drlg. sh. 4,580 ft.

Stanolind O. & G. Co. No. 4-A Pipkin, T.&N.O. Sur. Drlg. sh.&L. 5,195 ft.

Fannett—Jefferson County

Gulf Oil Corp. No. 1 Junker-Spencer, W. H. Smith Sur. Drlg. sh. 6,687 ft.

LaBelle—Jefferson County

Sun Oil Co. No. 1 John Ward, 933 ft. S of No. 2 Broussard, Wm. Burton Sur. 18⅝-in. csg. 109 ft.; 9⅝-in. csg. 8,538 ft.; 7-in. csg. 9,951 ft.; T.D. 10,147 ft.; cmtd. off bttm.; drld. cmt. to 10,060 ft.; run 2½-in. tbg. to test; came in as gas well; C.P. 4,200 lbs.; killed; pulled tbg.; set cmt. retainer at 8,950 ft.; perf. csg. to test.

Nome—Jefferson County

Shell Pet. Corp. No. 4-A Texas Public Service Co., W. H. Aldridge Sur. R.U. as relief well; drlg. sdy. sh. 3,426 ft.

Sun No. 8 Long, J. Blair Sur. Drlg. sh. 3,134 ft.

Sun Oil Co. No. 1 Gordon, J. Blair Sur. Drlg. sh. 2,660 ft.

Sun Oil Co. No. 2 Tindall, A. Horton Sur. 7-in. csg. 5,645 ft.; T.D. 6,070 ft.; run Schlumberger survey.

Cleveland—Liberty County

Gulf Oil Corp. No. 2-C Kirby Lbr. Co., J. Pleasants Sur. R.U.

Hankamer—Liberty County

Gulf Oil Co. No. 25 E. W. Boyt, Amos Allen Sur. T.D. 7,330 ft. per csg. 4,879-84 ft.; comp. as gas well.

Hardin—Liberty County

Jack Frazier No. 1 Buffam-Benning, J. Robeson Sur. R.U.

J. W. Frazier No. 1-B Lynott and Buffman, J. Robeson Sur. Drlg. L. 5,143 ft.

Gulf Oil Corp. No. 1 V. B. Hinson, H. B. Johnston Sur. M.I.M.

Jameson-Bryon No. 1 W. B. Hinson, H. B. Johnson Sur. Loc.

Shell Pet. Corp. No. 1 Hanchey, H. B. Johnson Sur. T.D. 105 ft.; W.O.C.

Strake Pet. Co. No. 1 W. T. Finley, A. B. Hardin Sur. 10¾-in. csg. 1,200 ft.; T.D. 7,639 ft.; P.B. 7,560 ft.; perf. 7,548-53 ft.; tstd. oil and gas and wash wtr.; run screen.

Woodley Pet. Co. No. 3-B McMurty, H. B. Johnson Sur. T.D. 7,600 ft. 7-in. csg. 7,600 ft.; I.P. 517 B.P.D.; ¼-in. ck.

Hull—Liberty County

Texas Co. No. 8 Barrow fee, J. Devore Sur. T.D. 4,907 ft.; 7-in. csg. 4,525 ft.

Texas Co. No. 10 Hannah, J. Devore Sur. Drlg. sh. 4,130 ft.

South Call—Newton County

Houston Oil Co.-Republic Prod. Co. No. 2 Peavy-Moore Lbr. Co., sec. 42, H.&T.C. Sur. 16-in. pipe 58 ft.; drlg. sh. 6,467 ft.

Bay City—Matagorda County

Hamman Expl. Co. No. 1 H. E. Thompson, Hall Sur. Core sh. 9,015 ft.

Buckeye—Matagorda County

United North & South Development Co. No. 1 G.B.M., Cotton Lge. T.D. 8,667 ft.; 7-in. csg. 8,667 ft.; perf. csg. 7,850-80 ft.; S.D.; prep. to core dpr.; (cor.).

Markham—Matagorda County

Harrison & Abercrombie No. 1-B Kountze, H. Parker Sur. T.D. 4,286 ft.; heaving sh.; P.B. 1,881 ft.

Palacios—Matagorda County

Atlantic-McCarthy No. 3 Foley Ld. Co., L. Goodwin Sur. Drk.

Atlantic-McCarthy No. 2 Palacios State Bank. L. Goodwin Sur. Drlg. 8,183 ft.
Glenn McCarthy No. 2 Foley, L. Goodwin Sur. T.D. 8,590 ft.; washing over tbg. at 8,265 ft.; tried to blow out; circulating.
Sun Oil Co. No. 1 Bay Shore Farms, Lewis Goodwin Sur. Drlg. sh. 10,490 ft.

Van Vleck—Matagorda County

Skelly Oil Co. No. 14-B Cobb. M. Cummins Sur. T.D. 8,478 ft.; run 9⅝-in. csg.

Orange—Orange County

Tillery & Ryan No. 1 Chesson, Wm. Dyson Sur. 10¾-in. csg. 1,180 ft.; drlg. sh. 5,560 ft.

Port Neches—Orange County

Texas Co. No. 6 W. H. Starks, W. E. Hall Sur. R.U.

Livingston—Polk County

Gem Oil Co. No. 5 Kavanaugh, A. Viesca Sur. R.U.

Segno—Polk County

Gulf Oil Corp. No. 8 Wing, sec. 14, I.&G N. Sur. T.D. 6,269 ft.; recvd. 125 lbs. pres.; 6 thribbles oil on D.S.T. 6,258-69 ft.; core sh. 6,667 ft.
Humble O. & R. Co. No. 2 Kirby, P. Garcia Sur. T.D. 5,196 ft.; 5½-in. csg. 5,-188 ft.; W.O.C.

Tomoconnor—Refugio County

Hewitt & Daugherty No. 58 Lambert. T.D. 5,918 ft.; I.P. 1,250 B.P.D.; ¼-in. ck.
Hewitt & Daugherty No. 59 Lambert, Swisher Sur. No. 8. T.D. 5,915 ft.; I.P. 1,320 B.P.D.; ¼-in. ck.

Spurger—Tyler County

Republic-Houston Oil Co. No. 5 Hurd fee. N. Hurd Lge. Core sdy. sh. 7,776 ft.

Keeran—Victoria County

Gulf Oil Corp. No. 12 G. R. Keeran Est. Core sh. 5,530 ft.
Union Oil Co. No. 7 Keeran, M. DeLeon Sur. Drlg. sh. 5,748 ft.

Tellener—Victoria County

Gulf Oil Corp. No. 1 Mahon and Buhler, W. C. Carroll Sur. T.D. 6,167 ft.; P.B. and sdtrkd.; drlg. sh. 5,837 ft.

Clay Creek—Washington County

Sun Oil Co. No. 7 Droeger, J. F. Perry Sur. T.D. 4,410 ft.; fsg.

Five Corners—Wharton County

Texas Co. No. 10-B Pierce Est., J. Caldwell Sur. T.D. 5,650 ft.; P.B. 5,506 ft.; W.O.C.

Louise—Wharton County

Pure Oil Co. No. 5 Lancaster, Morris & Cummings Sur. T.D. 5,157 ft.; I.P. 218 B.P.D.; ¼-in. ck.

Magnet—Wharton County

Atlantic Ref. Co. No. 5-B Cockburn, Smith & McKenzie Sur. T.D. 5,541½ ft.; I.P. 300 B.P.D.; ¼-in. ck.
Atlantic Ref. Co. No. 6-B Cockburn, Smith & McKenzie Sur. Loc.
Humble O. & R. Co. No. 2 Cockburn, Smith & McKenzie Sur. 7-in. 5,534 ft.; T.D. 5,541 ft.; P.B. 5,538 ft.; I.P. 135 B.P.D.; ⅛-in. ck.
Humble O. & R. Co. No. 3 Cockburn, Smith & McKenzie Sur. Drlg. sh. 2,-692 ft.
Texas Crusader Oil Co. No. 3 Cockburn, Smith & McKenzie Sur. Drlg. sh.&L. 4,978 ft.

Pickett Ridge—Wharton County

Gilcrease Oil Co. No. 1 W. W. Duson, Gifford Sur. Drlg. sh.&L. 4,200 ft.

Withers—Wharton County

Texas Co. No. 32-C Pierce Est., Wm. Pettus Sur. Drk.
Texas Co. No. 38-C Pierce, J. Caldwell Sur. T.D. 5,553 ft.; I.P. 303 B.P.D.; 12/64-in. ck.
Texas Co. No. 39-C Pierce, J. Caldwell Sur. 16-in. csg. 33 ft.; drlg. sh. 4,127 ft.
Texas Co. No. 3 Thompson, J. Caldwell Sur. Drlg. sh.&L. 4,154 ft.

GULF COAST WILDCATS

Brazoria County

Pure Oil Co. No. 1 W. A. Smith, S. F. Austin Sur. 18⅝-in. csg. 139 ft.

Chambers County

Merit Oil Co. No. 1 T. and M. Wright, C Smith Sur. 10¾-in. csg. 1,302 ft.; T.D. 7,515 ft.; 7-in. csg. 6,602 ft.; perf. 6,424-34 ft.; recvd. oil and S.W.; retstg.

Fort Bend County

Chapman Minerals Corp. No. 1 Sugar land, Geo. Brown & Belknap Sur. Drk.

Galveston County

R. R. Gray et al No. 1 Eidman, Anthony Hatch Sur. R.U.

Hardin County

Humble O. & R. Co. No. 1-A Olive Stermberg, J. Taylor Sur. R.U.

Harris County

H. C. Cockburn No. 1 White, Harris & Carpenter Sur. Loc.
Medford and Burke No. 1 W. A. and O. C. Pruitt, Gilbert Brooks Sur. Drlg. sh. 7,490 ft.

Jackson County

Cockburn & Hargrove No. 1 Mike Strauss, A. M. Clare Sur. R.U.
Magnolia Pet. Co. No. 1-A West ranch, R. Musquez Sur. Bldg. drk.

Jefferson County

Shell Pet. Corp. No. 1 W. P. McFaddin, S A. Pace Sur. No. 2. Bldg. road.

Liberty County

Humble O. & R. Co. No. 2 Sabine Tram. Malinda Whittington Sur. (Devers area). T.D. 9,007 ft.; fsg.

Madison County

Faucett & Kyle No. 1 Bailey, T. Boatwright Sur. 10-in. csg. 39 ft.; S.D.
Faucett & Kyle No. 1 Connor, J. P. Phillips Sur. S.D. 1,663 ft.; reported to be in oil sd.
W. H. Lawrence No. 1 Gustavis, J. Woodruff Sur. Drlg. 590 ft.

Matagorda County

Sun Oil Co. No. 1 Fred Robbins, C. H. Vandeveer Sur. R.U.

Polk County

Stewart Oil Co. No. 1 E. J. Galloway, J. Ringgold Sur. 10¾-in. csg. 1,000 ft.

Refugio County

Hogan Oil Co. No. 1 Kelley, M. & A. Roache Sur. Drlg. sh. 4,725 ft.

San Jacinto County

J. W. Oliphant et al No. 12 Gibbs Bros Lbr. Co., C. McKem Sur. T.D. 2,060 ft.; abd.

Trinity County

Gossage-Green and Thompson No. 1 R. E Thompson, J. A. Hickey Sur. Drk.

Victoria County

Stanolind O. & G. Co. No. 1 Henderson & Pickering, E. Benavides Sur. Drlg. sh. 7,400 ft.

Waller County

J. Brian Eby et al No. 1 Wm. Rice Institute, H. Stephens Sur. R.U.
Humble O. & R. Co. No. 1-A South Tex. Dev. Co., Wm. Hillhouse Sur. Loc.

Washington County

K. D. Harrison and C. E. Starr No. 1 Charles and Wm. Ellerman, Wm Bridges Lge. 13-in. csg. 290 ft.

Walker County

G. C. Dixon No. 1 Morgan, J. Ford Sur. Drk.
W. B. Gossage et al No. 1 Carey Ld. & Dev. Co., D. McDonald Sur. S.D. 2,-220 ft.

Wharton County

Buch & Holt No. 1 Kaener, F. C. Reynolds Sur. 10¾-in. csg. 620 ft.; drlg. sdy. sh. 6,040 ft.

S. W. TEXAS WILDCATS

Atascosa County

Brown & Bell No. 1 Atkins, 920-ac. tr., Sur. 3. Sd. 4,638-54 ft.; S.G.; drlg. 5,-702 ft.
L. W. Steiren No. 1 Crawford, 4 mi. W of Anchorage. Sd. 2,480-90 ft.; S.O.; T.D. sd. 2,506 ft.; plg. tbg. to C.O.; hole full of mud.

Bastrop County

J. W. Bibb No. 1 Lentz, F. Wilkenson Sur. S.D. 1,030 ft.

Bell County

W. H. Vernor No. 1 McQueen, 9 mi. S of Belton. S.D. 2,100 ft.; (cor.).

Caldwell County

C. O. Burgin No. 1 Mebane, F. B. Lee Sur. Comp.; 40 B.P.D.; set csg. 1,593 ft.; T.D. 1,775 ft.
Chiquita Oil Co. No. 1 Moses, Hinds Sur. T.D. Buda 2,617 ft.; set csg. 2,336 ft.; W.O.C.
Fain Gillock No. 1 Kelly, Berry Sur. S.D. 1,500 ft.
Heard & Heard No. 1 Brown, McCarley Sur. Spd.; set 10-in. csg. 60 ft.; W.O.C.
C. R. Richardson No. 2 Patterson, Pettus Sur. D.&A.; T.D. 776 ft.
Carl Riddle No. 1 Moore, Benton Sur. D.&A. 1,830 ft.

Comal County

J. R. Yates No. 2 Heidrich, Heidrich ranch. S.D. 2,000 ft.

DeWitt County

Miltex Oil Co. No. 1 Kerlick, Sewell Sur. Spd.

Dimmitt County

Teas & Maryland Corp. No. 1 McKnight, Blk. 13. sec. 23. S.D. 3,019 ft.
H. F. Wilcox O. & G. Co. No. 4 Light ranch, Blk. 9, sec. 97. D.&A. 4,470 ft.

Duval County

Hamil & Smith No. 1 Gruy, Sur. 155. Drlg. 1,921 ft.
Magnolia Pet. Co. No. 16 Herbst, Sur. 65. Cg. S.W. sd. 3,970 ft.
Magnolia Pet. Co. No. 1 Ruiz, Sur. 190. Drlg. sh. 3,762 ft.
J. J. O'Hern No. 1-F Benavides, Sur. 170. D.&A. 3,602 ft.
Penn-Palangana Oil Co. No. 2 Schallert, Sur. 239. S.D.; T.D. (cor.) 365 ft.
Slaughter & Hugle No. 1 Hunter Est., 80-ac. tr., sec. 515. D.S.T. 3,318-60 ft. rec. 650 ft. slightly gas-cut mud in 17 min., and 750 ft. brksh. wtr.; drlg. 3,626 ft.
Tsesmalis & Shipman No. 2 Canales, Lot 75. O.W.W.O.; old T.D. 4,005 ft.; showed gas; D.&A. 4,005 ft.

Edwards County

Dan Auld No. 1 Henderson, sec. 46, Blk. "E." S.D. 10 ft.
Amon G. Carter No. 1 Sweeten. SE¼. Blk. 2, Sur. 49. Fsg.; T.D. (cor.) 5,090 ft.

Frio County

Pagenkopf & Jamieson No. 1 Houston Est., 2,254-ac. tr., J. Figuerroa Sur. S.O. 2,610-03 ft.; set csg. to test 7-in. at 2,490 ft.; swbg.; S.O.&G. and wash wtr.; T.D. 2,651 ft.; set csg.; squeeze job.

Goliad County

Rual Swiger No. 1-B Wood, J. Shearn Sur. M.I.M.

Guadalupe County

Carver & Ellison No. 1 Rumpf, Burman Sur. T.D. 2,585 ft.; stdg.; S.O.
Ellmag Oil Co. No. 1 Hardiman, Dikes Sur. T.D. 2,201½ ft.; rng. csg.
Moon Oil & G. Co. No. 1 Pennshorn, Duran Sur. No. 4. D.&A.; T.D. 704 ft.
Olsen Oil Co. No. 1 Lillard, John Tom Sur. Drlg. sh. 1,183 ft.

Hidalgo County

Atlantic Ref. Co. No. 1 American Rio Grande. Cg. 7,633 ft.
Y. & B. Oil Co. No. 1 Waite, Tr. 382, Los Jidos Gr. Washing down; T.D. 4,050 ft.; prep. to D.D.; drlg. 4,872 ft.

Jim Wells County

H. M. Hill et al No. 1 Kuether, Lots 70 and 75, sec. 52, Haldeman Subd. Spdg.
Howell et al No. 1 Talbot, 181-ac. tr., Lavaca Gr. Set surf. csg. 505 ft.; W.O.C.
Magnolia Pet. Co. No. 7 Seeligson, 10,435-ac. tr., Los Jaboncillos Gr. Sd. S.G. 6,-488-6,503 ft.; D.S.T. 6,488-6,503 ft.; rec. 60 ft. dist.; 1,000 lbs. W.P. 10-min.; took short core; well blew out and burned; S.I. and killed; cleaned hole; set 7-in. protective csg. 6,794 ft.; drlg. 7,346 ft.

Karnes County

DeGraff & Reele No. 1 Cochran, McConnel Lge. D.&A.; (cor.) T.D. 1,307 ft.
Ivan Howard No. 1 Moczygemba, Erasmo Seguin 5, League Gr. Top sd. S.O. 2,-159 ft.; oil sd. 2,174-78 ft.; S.D., W.O. csg.

Kendall County

Landon & Peffley No. 1 Seidensticker. Sur. 257, Chorcon Gr. S.D. 530 ft.

Kennedy County

La Sal Vieja Oil Corp. No. 1 Garcia Ld. & Cattle Co., Blk. 95, Tr. 73. R.U.

Lee County

Jas. E. Pederson No. 1 Turner, David Hudson Sur. S.O.&G. 6,140-80 ft.; sdtrkd. at 4,600 ft. and drld. to 6,132 ft.; S.O.&G.; set csg. 6,021 ft.; acdzg. with 20-bbl. load; when opened well flwd. 20-bbl. head and went dead; swbd. oil and wtr.; acd.; to put on pmp.; S.D.

Live Oak County

Chiquita Oil Co. No. 1-A Taylor-Lark, Scrugham Sur. Set csg. 972 ft.; W.O.C.
L. Glasscock No. 1 Bonham, Simmons Subd., Blk. 45. Spd.
Chas. Hanna et al No. 1 Wedding, 200-ac. tr., Haughy Sur. S.D. 1,900 ft.
Loma Oil Co. No. 2 Schwartz, Mark Kil-ely Sur. D.&A. 1,405 ft.
Marzo Oil Co. No. 1 Alexander, Ayres Sur. Drlg. 473 ft.
Ranco Oil Corp. No. 1 fee, 660 ft. NW and SW lines, Pointevent Sur. 3. Drk. stdg.
Reynosa Oil Co. No. 1-A Nichols, 100-ac. tr., Subd. "D," Ryan Sur. Drlg. 437 ft.
Standard Oil Co. of Texas No. 1 Nichol-son, Thompson Sur. T.D. 3,993 ft.; S.D.; W.O.O.

Maverick County

Rheingold & Ruben No. 1 Johnson, Sur. 2. D.&A.; T.D. 1,805 ft.
Rio Dev. Co. No. 4 State Bank & Trust Co., Sur. 2. D.&A. 890 ft.
Wellington Oil Co. No. 1 Chittam, 330 ft. N line, 2,310 ft. W line, sec. 129, Blk 7. T.D. 3,287 ft.; flwd. intermittently at rate of 10 B.P.H. and went dead; acidized; swbd. 7 B.P.H. oil; R.U. to pmp.; T.D. 3,287 ft.

McMullen County

Alabama Minerals Corp. No. 1 Gordon. O.W.W.O.; T.D. 2,537 ft.; D.&A.
Alabama Minerals Oil Co. No. 2 Gordon, Sur. 127. Spd.
Coyle & Bedwell No. 1 Two Rivers Rnch. Co., sec. 60. S.D. 10 ft.
V. G. Schimmel No. 1 Kountz, E.T.&R.R. Sur. Drlg. 1,927 ft.
C. C. Shumway No. 11 Shiner, sec. 6, Shumway Subd. T.D. 980 ft. Reaming.

Medina County

Adams et al No. 1 Kreisle, Sur. 908. R.U.
R. S. Bolling No. 1 McMenemy, Sur. 33½ R.U.
M. L. Walker No. 1 Riff, Hans Sur. No 43. Drlg. sh. 311 ft.

Milam County

Kingdor Expln. Co. No. 1 Stidham. Drlg. 3,417 ft.

Nueces County

Culton & Meador No. 1 Bailey Est., Blk. 65, J. Elliff Subd., Joaquin Lopez de Herrera Sur. Drlg. 256 ft.
Mills Bennett Prod. Co. No. 1 Johnson, sec. 125, Pauls Subd. Drlg. 1,707 ft.
Richardson Pet. Co. No. 1 Cunningham, sec. 77. Spd.
Sannix Oil Co. No. 1 Neslonev, 760-ac. tr., Casa Blanca Gr. Drlg. 3,605 ft.
Seaboard Oil Corp. No. 1 John M. Luby, 466 ft. S and W lines, Blk. 1, Sh. 2. Luby Subd. D.S.T. 5,069-79 ft. rec. 330 ft. P.L.O. and 30 ft. mud, 185 lbs. W.P. in 10 min.; sd. 5,072-79 ft.; 7-in. csg. 5,079 ft.; perf. 5,071-74½ ft.; clg.
Southern Minerals Corp. No. 2 King, Blk. 6, R. King Farm Lots. D.S.T. 4,020-33 ft.; rec. 640 ft. oil, 850 ft. S.W. in 20 min. at 35 lbs. W.P.; cg. 6,098 ft.

San Patricio County

Argo Oil Corp. No. 1 Soehnge, 159.66-ac. tr., Blk. 11, Schleicher & Joseph Subd., Delgado Gr. T.D. 4,962 ft.; top sd. 4,957 ft.; well tried to blow out; killed to deepen; cg. sh. 5,206 ft.
H. J. Porter No. 1 Schmalsteig, sec. 9, Paul Subd. Drlg. 5,356 ft.

Starr County

Calderoni-James-Foliette No. 1 Rodriguez, Blk. 6, Sh. 56, Porc. 80. Set 4½-in. csg. 1,483 ft.; T.D. 1,511 ft.; P.B. T.D. 1,756 ft.; S.D.; W.O.O.
Collins No. 1 Guerra, Sh. 6, San Jose Gr. Drlg. 2,065 ft.
Dodd Tr. No. 1 Wardner, Vela Sur., Porc. 84. T.D. 810 ft.; S.D.
G. E. Dodd No. 1 Wood Est. Set 10-in. surf. csg. 80 ft.; W.O.C.
Transwestern Oil Co. and Davenport No. 3 Slick, sec. 527. T.D. 6,862 ft.; fsg.

Travis County

W. O. Caffey No. 1 Bremond, 104.5-ac. tr., Santiago del Valle Sur. S.D. 400 ft.
W. O. Caffey No. 1 Meister, Conrad Sur. Drlg. 58 ft.
D. E. Hamer No. 1 Benson, Wilson Sur. Set 5½-in. csg. 258 ft. to shut off wtr.; W.O.C.
LaShell, Gardner & Wilson No. 1 Wil-son, Blk. 1. Drlg. 416 ft.
J. E. Mills No. 1 Washington, Navarro Sur. S.D. 1,150 ft.

Webb County

French Oil Corp. No. 1 Benavides, Sur. 704. Cg. sh. 3,241 ft.
O. W. Killam No. 1 Garcia, Blk. 26, Los Ojuelos Sur. Cg. sh. 1,921 ft.
Randon Oil Co. No. 1 Palmer, Sur. 474. D.&A. 2,214 ft.

Wilacy County

Magnolia Pet. Co. No. 1 Armendiaz, Sh. 4, San Juan de Carricitos Sur. S.D. 5,-600 ft.

Wilson County

Diamond Halff Oil Co. No. 1 Houston. 200-ac. tr., Reynolds Sur. Drlg. Buda 5,069 ft.
Arnold, Dink, Stone & Haley No. 1 Black, 1,102.3-ac. tr., hrs. of Juan and Simon Arocha Sur. S.D. 706 ft.
Pat Higgins No. 1 Higgins, Rodriguez Sur. 237. Drlg. sdy. sh. 1,326 ft.

S. W. TEXAS PROVEN

Lamar—Aransas County

Barnsdall Oil Co. No. 1 Kate Edwards, Lot 87, Lamar Townsite. Old T.D. 7,-996 ft.; stuck tbg.

McCampbell—Aransas-San Patricio Counties

Atlantic Ref. Co. No. 1-F McCampbell, Blk. 28. Set csg. at T.D. 7,130 ft.; P.B. and perf. 6,785-87 ft.; comp.; no ga.
Atlantic Ref. Co. No. 8-C McCampbell, Lot 1, Blk. 42. Perf. 7,112-13 ft. and 7,117-20 ft.; comp.; 308 B.P.D. on ⅞-in. ck.
Atlantic Ref. Co. No. 9-C McCampbell, Lot 2, Blk. 41. Set surf. csg. 1,545 ft.; drlg. 1,650 ft.
Atlantic Ref. Co. No. 3 Maryland Trust, Blk. 23. Drlg. 4,021 ft.
Atlantic Ref. Co. No. 4-B Murray, Lot 9, Blk. 12. Sd. 7,092-96 ft.; set csg. 7,096 ft.; comp.; no ga.
Atlantic Ref. Co. No. 1-D Murray, Lot 3, Blk. 37. Set surf. csg. 1,500 ft.; W.O.C.
Atlantic Ref. Co. No. 4-B Porterfield, Blk. 10, Lot 10. T.D. 7,186 ft.; sd. 7,183-86 ft.; washing in.
Atlantic Ref. Co. No. 5-B Porterfield, Blk. 1. Drlg. 6,313 ft.
Atlantic Ref. Co. No. 1-C Porterfield, Lot 8, Blk. 12. Cg. 8,512 ft.
Atlantic Ref. Co. et al No. 1-D Porterfield, Lot 10, Blk. 13. Set csg. 7,226 ft.; W.O.C.
Buckingham Oil Co. and Tom Graham No. 2-D Porterfield, Lot 11, Blk. 9. Comp.; 380 B.P.D. on ⅜-in. ck.; perf. 7,126-30 ft.; set 7-in. csg. 7,150 ft.
Buckingham Oil Co. No. 4-B McCamp-bell, Lot 16, Blk. 40. O.W.W.O.; old T.D. 7,430 ft.; R.U. to D.D.
Buckingham Oil Co. No. 12-A McCamp-bell, Blk. 42. Perf. 7,095-7,119 ft.; S.W. & O.; pigd. to reperf.
Buckingham Oil Co. No. 1-B McCamp-bell, Lots 13 and 14, Blk. 40. O.W.W.O.; old T.D. 6,557 ft.; sdtrkd. 6,351 ft.; T.D. 6,559 ft.; perf. 6,538-46 ft.; completing.
Buckingham Oil Co. No. 1-C McCampbell, 33.8-ac. tr., Blk. 27. T.D. 7,150 ft.; D.&A.
Franston Oil Co. No. 1 Murray, Lot 7, Blk. 37. Drlg. 5,520 ft.
Graham Oil Co. No. 2 Edwards, Lot 16, Blk. 7. Drlg. 1,015 ft.
Graham & Buckingham Oil Co. No. 3 Porterfield, Blk. 9, Lot 8. R.U.
Tom Graham No. 1 Edwards, Lot 16, Blk. 7. Set csg. on 7,100-ft. sd.; comp.; no ga.; brkn. sd. 7,105½-21 ft.; T.D. 7,136 ft.
Landreth Prod. Co. No. 7-A McCampbell, Lot 1, Blk. 39. Cg. 6,537 ft.
Neill & Peterson No. 2-A McCampbell, Lot 1, Blk. 43. Set 7-in. csg. 7,118 ft.; W.O.C.
Norman Bertleson No. 2-A Murray, Lot 5, Blk. 37. R.U.
Shasta Oil Co. No. 1 Davis, Lot 16, Blk. 9. Set csg. 7,130 ft.; perf. 7,104-09 ft.; completing.
Guv Warren & Carmos Drlg. Co. No. 1 Kleineck, Lot 12, Blk. 9. Cg. 6,546 ft.

Carroll—Bastrop County

Nelson Puett No. 7 Carroll Est., 535.75-ac.

tr., A. Mays Sur. T.D. 2,299 ft.; set 5½-in. csg. 2,140 ft.; washing.

North Dale—Bastrop County

Marts & Beavens No. 1 Lackey, Gray Sur. T.D. 2,225 ft.; acdzg.
Ralph R. Ogden No. 1 Riddle, K. Gray Sur. Drlg. Serp. 2,185 ft.

Plummer—Bee County

W. C. McBride No. 2-B Plummer, Chessman Sur. Oil sd. 3,055-55½ ft. and 3,057-58 ft.; set 5½-in. csg. 3,058 ft.; comp.; 113.16 B.P.D. on ⅛-in. ck.

West Tuleta—Bee County

Salt Dome Oil Co. No. 3 Tuleta Merchantile Co., SW¼, sec. 10, Wragley Subd., Uranga Gr. Jtg.; T.D. 3,079 ft.; flwg. 5 B.P.D. oil and slugs mud; tstg.

Gas Ridge—Bexar County

W. H. Kennon No. 1 Oliver. T.D. 3,464 ft.; S.D.

Von Ormy—Bexar County

Roger Putnam No. 9 Wetz, Simpson Sur. R.U.

Alta Mesa—Brooks County

Standard Oil Co. of Texas No. 1 Mestina, Lse. No. 1. O.W.W.O.; old T.D. 4,277 ft.; prep. P.B. to 3,562 ft.; tstg. for gasser; S.I.P.C. 1,400 lbs.
Standard of Texas No. 5 Mestina, Lease No. 1. 7-in. csg. set 3,220 ft.; T.D. 5,505 ft.; perf. 4,513-20 ft.; plugged and re perf. 4,520-24 ft.; pig. tbg. to reperf.; tstg.
Standard Oil Co. of Texas No. 10 Mestina, Lse. No. 1, La Mestina & Gonzalina Sur. Drlg. 1,967 ft.

Alta Verde—Brooks County

Bishop & Woods No. 1 Maupin, Sur. 311 P.B. 1,114 ft.; perf. csg. 1,094-1,108 ft.; T.D. 1,879 ft.; D.&A.
Bishop & Woods No. 1 Powers, 378-ac. tr., Sur. 311. Cg. 917 ft.

Branyon—Caldwell County

B. & T. Pet. Co. No. 2 Magee, J. A. Neill Sur. T.D. 2,295 ft.; set 5½-in. csg. 2,003 ft.; went dead; prep. P.B.
Johnson Drlg. Co. No. 2 Lockhart State Bank, John Roe Sur. Set 7-in. csg. 1,916 ft.; T.D. 2,212 ft.; comp.; 60 B.P.D.
Martell Pet. Co. No 2. Clark, J. R. Miller Sur. Drlg. 1,815 ft.
Martell Pet. Co. No. 2 Young, J. R. Miller Sur. T.D. ch. 2,066 ft.; R.U. to pmp.
Perot Oil Corp. No. 2 Brown, J. R. Miller Sur. T.C. 1,920 ft.; set 7-in. csg. 1,920 ft.; T.D. 2,150 ft.
Potter-Snowden No. 2 McCrory, Neill Sur. Comp.; 90 B.P.D.; T.D. 2,200 ft.; 7-in. csg. 1,865 ft.
Second National Oil Co. No. 1 White. Swbd. O.&G.; 7-in. csg. 2,080 ft.; comp.; 20 B.P.D.; T.C. 2,090 ft.; T.D. 2,203 ft.
Second Nation Oil Co. No. 2 White, J. Pinchback Sur. Drlg. sh. 1,677 ft.
Taylor Ref. Co. No. 10-A Branyon, Cooper Sur. Drlg. 604 ft.

Buchanan—Caldwell County

Edwill Oil Co. No. 4 Browne, Chas. M. Cannon Sur. Drlg. ck. 2,256 ft.
G. D. Fairtrace No. 1 McMahon, Pinchback Sur. Drlg. sh. 1,816 ft.
McAlester Fuel Oil Co. No. 3 Miears, Cannon Sur. Set surf. csg. 20 ft.; T.D. Edw. 2,512 ft.; swbg.
Ralph Ogden No. 1 Dinges, Damon Sur. Set 7-in. csg. 1,861 ft.; T.D. 2,205 ft.; rng. tbg.
Lewis-Patton Co. No. 1 Brown, Cannon Sur. T.D. 2,218 ft.; W.O. pmp.
Potter-Snowden No. 5 Medlin, Cannon Sur. T.D. ck. 2,237 ft.; completing.
Potter-Snowden No. 6 Medlin, Cannon Sur. Set csg. 51 ft.; W.O.C.

Burdett Wells—Caldwell County

F. & W. Drlg. Co. No. 1 Smith, Guadalupe College Sur. D.&A. 1,220 ft.
Lanning & Coffield No. 1 Trammel, Guad. College Sur. T.C. 1,985 ft.; set 7-in. 1,881 ft.; comp.; 12 B.P.D. on pmp.

Dale—Caldwell County

Marts & Beavens No. 1 Miears, Swearingen Sur. Drlg. sh. 517 ft.
R. R. Ogden No. 1 Dinges, Swearingen Sur. T.D. Serp. 2,205 ft.; W.O.P.

Dunlap—Caldwell County

Lanning & Coffield No. 1 Rodenberg, Guadalupe College Sur. Drlg. 1,800 ft.
Chas. Schreiner No. 1 Moody, Seal Sur S.D.; T.D. ck. (cor.) 2,150 ft.; T.C. 2,146 ft.

Larremore—Caldwell County

Spokane O. & G. Co. and Okla. O. & G. Co No. 3 Starkey, C. Crenshaw Sur. T.D. 905 ft.; S.D.

Salt Flat—Caldwell County

Louis Crouch No. 1 Davis, Hinds Sur Drlg. sh. 807 ft.
E. J. Koeugh No. 1 Tiller, Hinds Sur T.D. 2,475 ft.; flwg. est. 75 B.P.D. by hds.
Pummel & Brady No. 1 Jackson, S. Morris Sur. S.D. 1,500 ft.
Elmag Oil Co. No. 1 Pope, J. P. Rains Sur. Cg. 2,306 ft.
Geo. Haines No. 1 Davis, Hinds Sur. Drlg. 178 ft.
Hantho-Nelson, Inc., No. 1 New, James Hinds Sur. T.D. 2,473 ft.; comp.; 323 B.P.D. on open tbg.

Benavides—Duval County

Arkansas Fuel Oil Co. No. 7 Rossi, Santos Flores Gr. Set 7-in. csg. 4,773 ft.; T.D. 4,786 ft.; comp.; 300 B.P.H.; sd. 4,773-79½ ft.
Benedum & Trees Oil Co. No. 7 Puig, San Andres Gr. Sd. 4,803-10 ft.; set csg.; comp.; 110 B.P.D.; ⅛-in. ck.; perf. 4,803-06 ft.
Benedum & Trees Oil Co. No. 8 Puig, 750-ac. tr., San Andres Gr. Oil sd. 4,794-4,800 ft.; set csg. 4,794 ft.; swbg. oil and wtr.; T.P. 250 lbs.
Blanchard No. 1 Puig, Blk. 59, Sur. 238. O.W.W.O.; T.D. 5,425 ft.; well went dead; squeezed; perf. 5,401½-05 ft.; W. O.C.
Bridwell Oil Co. No. 5 Anciro, Santos Flores Gr. No. 25. R.U.
Burton Drlg. Co. No. 1 Southland Life, Blk. 12, Sweden Farm Lots. Drlg. 2,013 ft.
L. Glasscock No. 1 Flores, sec. 9, Sweden Farm Lots. T.D., lig. 4,805 ft.; S.I.
Frank Gravis Oil Co. No. 5-A Puig, 100-ac. tr., San Andres Gr. T.D. 4,710 ft.; clg. pits.
Gravis & Doran No. 7 Puig, San Andres Gr., sec. 24. R.U.
Hiawatha O. & G. Co. No. 4 Southland Life, sec. 12, Flores Gr. No. 25. Sd. 4,770-77 ft.; set csg. 4,777 ft.; rng. tbg.
Navarro Oil Co. No. 3 Owens, 100-ac. tr., Blk. 19. T.D. oil sd. 4,777 ft.; comp.; 187 B.P.D.; ¼-in. ck.; perf 4,714-24 ft.
Reynosa Oil Co. No. 6 Wilson, 80-ac. tr., sec. 9. Set csg.; T.D. 4,788 ft.; comp.; flwg. in tanks.
Russ Pet. Co., Inc., No. 9 Farias, sec. 9, Sweden Farm Lots. Sd. 4,796-4,803 ft.; set csg. 4,792 ft.; W.O.C.
Russ Pet. Co., Inc., No. 2 Rossi, sec. 10, Sweden Farm Lots. Prep. spd.
Standard Oil Co. of Kans. No. 5 Parr, 80-ac. tr., San Andres Gr. R.U. and S.D.
Standard Oil Co. of Kansas No. 6 Rossi, Santos Flores Gr. Set csg. 608 ft.; W. O.C.
Standard Oil Co. of Kans. No. 10 Rossi Santos Flores Gr. Set 7-in. csg. 4,775 ft.; T.D. sh. 4,791 ft.; comp.; 209 B.P. D.; ⅛-in. ck.; sd. 4,775-91 ft.
Standard Oil Co. of Kansas No. 4 Southland Life, sec. 12, Santos Flores Gr. Drlg. 3,526 ft.
Sun Oil Co. No. 1 Barton Est., 1,056.1-ac. tr., Surs. 425, 6 and 24, San Andres Gr. Cg. 5,608 ft.
Woodley Pet. Co. No. 1 West, Sweden Farm Lot No. 10. Set csg. 553 ft.; W. O.C.

Colmena—Duval County

Conservative Oil Co. No. 3 D.C.R.C., Sur. 47. R.U.

Driscoll—Duval County

Continental Oil Co. No. 19 Sevier, Sur. 448. Sd. 3,600-18 ft.; set 7-in. csg. 3,614 ft.; W.O.C.

Hoffman—Duval County

Cox & Hamon No. 6 Green, Sur. 118. Sd. 2,712-16 ft.; set csg. 2,714 ft.; comp.; 72 B.P.D. on ½-in. ck.; T.D. 2,716 ft.
Cox & Hamon No. 7 Green, Sur. 118. Drlg. 2,118 ft.
Cox & Hamon No. 11 Green, Sur. 118. Oil sd. 2,701-02 ft.; comp.; 28 B.P.D.; set 7-in. csg. 2,701 ft.
Cox & Hamon No. 10 Robles, sec. 68. Sd. 2,691-99 ft.; set csg. 2,691 ft.; comp.; est. 6 B.P.D.; jtg.; T.D. 2,701 ft.
Gulf Stream Oil Co. No. 5-B Hoffman, Sur. 118. Drlg. 1,917 ft.

Kohler—Duval County

Bunn Bros. & Coates No. 2-A Peters, Gibson Sur. 397. Sd. 1,835-45 ft.; set csg.; W.O.C.

Labbe—Duval County

Magnolia Pet. Co. No. 10 Labbe, Sur. 1. Drlg. 2,572 ft.

Lundell—Duval County

Govt. Wells Oil Co. No. 9 Lundell, Sur. 140. Comp.; 5 B.P.H.; T.D. 1,530 ft.; set csg. 1,524 ft.
Govt. Wells Oil Co. No. 10 Lundell, Sur. 140. R.U.

Peters—Duval County

Gier & Kone No. 2 Peters, Sur. 38. Spd.; set surf. csg. 23 ft.; W.O.C.

Piedra Lumbre—Duval County

Magnolia Pet. Co. No. 8 D.C.R.C., Sur. 203. Set 7-in. csg. 1,994 ft.; W.O.C.
Tarver & Putnam No. 2 Ruiz, Sur. 127. Oil sd. 2,548-51 ft. and 2,567-72 ft.; tstg.

Seven Sisters—Duval County

Rudco O. & G. Co. No. 1 Ellis, Sur. 308. Spdg.
S. and D. Daube No. 41 Campos, Sur. 224. Sd. 2,694-2,701 ft. and 2,720-30 ft.; odor oil; comp.; 14 B.P.D. on ¼-in. ck.; T.D. 2,730 ft.
Sun Oil Co. No. 3 Rodriguez, Sur. 222. T.D. 2,828 ft.; comp.; 60 B.P.D. on pmp.

Sweden—Duval County

Hiawatha O. & G. Co. No. 3 Miller, sec. 24, Flores Gr. No. 25. Drlg. 5,192 ft.

Thomas-Lockhart—Duval County

Lockhart Bros. No. 3 Parr, Sur. 277. T.D. 4,698 ft.; swbg.
Taylor Pet. Co. No. 1 Parr, 40-ac. tr., Sur 279. Oil and gas sd. 4,699-4,707 ft.; oil sd. 4,724-25 ft.; cg. ahead 4,916 ft.

Pearsall—Frio County

Amerada Pet. Corp. No. 8 Haiff & Oppenheimer, S. A. Ditch Sur. 1,104 (W.O.). Set 7-in. protective csg. 10,341 ft.; stdg. 10,741 ft.; prep. P.B.

Darst Creek Extn.—Guadalupe County

Geo. Bobb No. 1 Williams, DeWitt Sur. D.&A. 75 ft.

Kenedy & Crowley No. 1 Anderson, J. R. Robinson Sur. T.D. 2,655 ft.; S.D.
Gulf Oil Corp. No. 7 Dix, Robinson Sur. Drlg. 2,225 ft.
D. A. Kramer No. 1 Anderson, Darst Sur. R.U.
Riddle Oil Co. No. 2 Williams, DeWitt Sur. No. 13. Set csg. 2,378 ft.; S.D.
Texas Co. No. 3 Dowdy, Darst Sur. Drlg. 77 ft.
Trio Oil Co. No. 2 Willie, Darst Sur. T.D. Edw. 2,642 ft.; comp.; no ga.

Luling—Guadalupe-Caldwell Counties

Diamond Halff Oil Co. No. 1 McKean, Nancy Reaville Sur. Drlg. 2,237 ft.
Magnolia Pet. Co. No. 9 Branyon, Reaville Sur. Set csg. 2,155 ft.; comp.; 90 B.P.D.; T.D. 2,170 ft.
Millican & Norman No. 2 Lampkin, J. Henry Sur. Set csg. 1,715 ft.; treating; T.D. 2,116 ft.; pmpg.; comp.; no ga.
Muckelroy & Schawe No. 1 King, N. Reaville Sur. Set 5½-in. at T.D. 2,097 ft.
Potter P. L. Co. No. 1 Cartwright, J. Henry Sur. T.D. 1,991 ft.; T.C. 1,781 ft.; 5½-in. csg. 1,770 ft.; S.D.; W.O.P.
Spokane O. & G. Co. No. 1 Hibbits, J. Henry Sur. Drlg. sh. 521 ft.
Rio Bravo Oil Co. No. 17-L Merriweather, John Henry Sur. Spd.
Taylor Ref. Co. No. 2 Harris, H. Cottle Sur. Crevice 2,002-06 ft.; P.B. 1,948 ft.

Staples—Guadalupe County

W. W. Lincoln No. 2 Gabriel, Geo. Allen Sur. T.C. 695 ft.; T.D. 710 ft.; 7-in. csg. 695 ft.; comp.; 5 B.P.D. on pmp.

Zoboroski—Guadalupe County

Forest Dev. Co. No. 6 M. Hoffman, DeWitt Sur. Comp.; 123 B.P.D.; T.D. ch. 2,318 ft.

LaBlanca—Hidalgo County

Dee Davenport No. 1 Hidalgo Wtr. & Imp. Dist., Lot 16, Engleman Subd., Smith Sur. 262. Cg. sd. 7,933 ft.
Dee Davenport No. 2 Swallow, Clyde Fennis Ld. Co. Sur. Set 7-in. csg. 7,939 ft.; perf. 7,908-12 ft.; clg.; comp.; 80 B.P.D. on ⅜-in. ck.; T.P. 2,500 lbs.; C.P. 3,100 lbs.
Gulf States Oil Co. No. 2-A Delta Orchards, Lot 3, Sur. 94. Fsg. 2,395 ft.

Samfordyce--Hidalgo-Starr Counties

Fohs Oil Co. No. 1 Guerra, 25-ac. tr., Tr. 254, Porc. 40. R.U.
Graham et al No. 2 Villareal, 26-ac. tr., Porc. 38. R.U.

Alworth—Jim Hogg County

French Oil Corp. No. 6 Garcia, Sur. 269. T.D. 1,063 ft.; flwg. 1 B.P.D.; sds. 1,034-36 ft. and 1,038-49 ft.; tstg.

Las Animas—Jim Hogg County

Darby Pet. Co. No. 1-A Holbien, Blk. 61, sec. 6, Holbien Subd., Las Animas Gr. Drlg. 1,005 ft.

West Premont—Jim Wells County

Smith & Story No. 1 Dansard, C Lots 16 and 17, sec. 72. M.I.M.
Homer Presnall No. 1 Holmes, Lots 59 and 70, sec. 76. T.D. 2,259 ft.; D.S.T. rec. 50 ft. oil 4½ min.; set csg. 2,257 ft.; recmtg. csg.

North Pettus—Karnes County

Magnolia Pet. Co. No. 19 Porter, B.&B. Sur. Drlg. 3,662 ft.

South Burnell—Karnes County

Luling O. & G. Co. No. 6 Boyce, Still Sur. No. 8. Oil sd. 3,634½-35½ ft.; set 5½-in. csg. 3,621 ft.; W.O.C.

Oakville—Live Oak County

Simmons O. & G. Co. No. 3-B Reagan. Romero Sur. Prep. dri. plugs in surf. csg. 40 ft.

Ezzell—McMullen County

Harry Ezzell No. 3-A fee, sec. 23. Drlg. 1,018 ft.
L. Glasscock No. 1 Bonham, Gloreck Sur., Lot 2431. Oil sd. 1,460-70 ft.; set csg.; W.O.C.
R. P. Holland No. 2 Matkin, Gloreck Sur., Lot 2433, Simmons Sur. Sd. 1,478-86 ft.; set csg.; comp.; 200 B.P.D. on pmp.; set 5½-in. csg. 1,486 ft.; W.O.C
R. P. Holland No. 3 Matkin, Lot 2433. R.U.
Sure Oil Co. No. 1 Gayle, Simmons Sur. D.&A. 1,519 ft.
Sure Oil Co. No. 2 Gayle, Lot 2434. Spd

South Calliham—McMullen County

Bill Howard No. 9 Claunch, Hely Sur. Drlg. 1,157 ft.

Loma Alta—McMullen County

J. T. Lanier No. 1 Hagist, SE¼, N½, Sur 481. D.&A. 2,513 ft.

Taylor—Medina County

R. J. Taylor No. 3-A fee, Sur. 135. R.U.

Agua Dulce—Nueces County

Heep Oil Corp. No. 1 Purl, 440-ac. tr., Subd. No. 2. Sd. 5,724-29 ft.; drlg. ahead 6,623 ft.
Texon Drlg. Co. No. 2 Elliff, 3,054-ac. tr. Longorio Sur. T.D. 6,668 ft.; sd. 6,637-68 ft.; reperf. 6,663-68 ft.; tstd. gasoline; comp.; 140 B.P.D. dist. on ⅛-in. ck.; T.D. 6,668 ft.; T.P. 2,300 lbs.; C.P. 2,650 lbs.
Union Prod. Co. No. 1 Simmons, 1,000-ac. tr., Lopez de Juan Sur. Set surf. csg. 1,520 ft.; W.O.C.
Union Prod. Co. No. 1 Schroeder, sec. 87, Paul Subd., Driscoll ranch. Set csg. 8,230 ft.; clg.; showing some gas on ⅛-in. ck.

Clara Driscoll—Nueces County

O. W. Killam No. 4 Ellick, sec. 109. T.D. 3,906½ ft.; oil sd. 3,901-06½ ft.; set 7-in. csg. 3,903⅛ ft.; tstg.
O. W. Killam No. 5 Elick, 86-ac. tr., sec. 109, Pauls Subd. S.D.O.; T.D. 455 ft.
Mid-Continent Pet. Corp. No. 4 Sevier, R. Russell Sur. Oil sd. 3,807-10 ft.; set 7-in. csg. 3,806 ft.; W.O.C.

S. Clara Driscoll—Nueces County

Sun Oil Co. No. 1 Flynn, sec. 110, Paul Subd., Driscoll ranch. D.S.T. 3,928-38 ft.; rec. 2,140 ft. fluid incl. 450 ft. P. L.O. and 1,540 ft. oily mud and 120 ft. S.W.; sd. 3,930½-38½ ft.; perf. 3,930-33 ft.; reworking.

Flour Bluff—Nueces County

Humble O. & R. Co. et al No. 2 Collier. Set csg. 6,652 ft.; W.O.C.
Humble O. & R. Co. et al No. 2 Dunn, Lot 8, Blk. 41. Drlg. sd. 6,538 ft.
Humble O. & R. Co. et al No. 6 Gulden, Blk. 47. Set csg. 6,667 ft.; comp.; 169 B.P.D. on ⅛-in. ck.
Humble O. & R. Co. et al No. 1 Smith, Lot 9, Blk. 49. Drlg. sh. 6,640 ft.
Humble O. & R. Co. et al No. 8 Webb, Lot 9, Blk. 56. T.D. 6,655 ft.; flwg. pits.

London—Nueces County

Wellington Oil Co. and Seaboard Oil Corp. No. 1-B Lehman, NW¼, SE¼, sec. 25. T.D. 5,000 ft.; S.D.; W.O.O.

Luby—Nueces County

Seaboard Oil Corp. No. 4 Luby, Blk. 4, Sh. 2, Luby Subd. Oil sd. 5,030-57 ft.; set csg. and perf. 5,052-55 ft.; clg. in pits.
Stanolind O. & G. Co. No. 3 McCann, 500-ac. tr. D.S.T. 4,331-47 ft.; rec. 550 ft. oil; W.P. 190 lbs. 10 min.; sd. 4,336-47 ft.; T.D. 5,099 ft.; S.D.; W.O.O.

Saxet Heights—Nueces County

Wm. Brady No. 2 Whalen, Villareal Sur. Oil sd. 4,043-56 ft.; set 5½-in. csg. 4,065 ft.; T.D. 4,066 ft.; tstg.
Crown Central Pet. Corp. No. 6 Page, 75-ac. tr., Page Lds. Sur. Set 16-in. csg. 180 ft.; W.O.C.
Donico Prod. Co. No. 6 Donigan, 80-ac. tr. T.D. 4,867 ft.; D.&A.
J. E. Freeman No. 1 Scott, Sur. 500. No report.
Greta Oil Co. No. 5 Humphries, Stevens Sur. T.D. 6,790 ft.; set csg. 4,132 ft.; plugged perf. 4,055-75 ft.; P.B. to reperf.; comp.; 162 B.P.D.; ⅛-in. ck.
Greta Oil Corp. No. 1 Isensee, Sur. 404. T.D. 4,910 ft.; rng. elec. survey.
Greta Oil Corp. and Morgan No. 8 Morgan-Clark, Sur. 405. Set csg. 1,100 ft.; S.D.
Hiawatha O. & G. Co. No. 14 Hutchins-Stillwell Sur. 500. Set 16-in. csg. 1,158 ft.; W.O.C.
Houston Oil Co. No. 5-A Harrell, Sheppard Farm Lots. Cg. sd. 6,913 ft.
Houston Oil Co. No. 9-A Harrell, Lot 24, Sheppard Farm Lots. Oil sd. 4,530-36 ft.; drlg. plugs 4,537 ft.
Houston Oil Co. No. 4 Hunter, 75-ac. tr., sec. 8, Rge. 5. T.D. 4,868 ft.; comp.; 155 B.P.D.; sd. 4,864-66 ft.
Houston Oil Co. No. 5 Hunter, 75-ac. tr., sec. 8, Rge. 7. Set condr. csg. 201 ft.; W.O.C.
Houston Oil Co. No. 29 Morgan, sec. 7, Rge. 6. Drlg. sh.&L. 3,367 ft.
H. H. Howell No. 7 Hutchins, 80-ac. tr., Sur. 416. Set surf. csg.; W.O.C.
H. H. Howell No. 8 Hutchins, 80-ac. tr., Sur. 416. T.D. 6,964 ft.; P.B. T.D. 6,779 ft.; W.O.C.
J. K. Kepley No. 8 Donigan, sec. 7, Rge. 6. Perf. 4,426-28 ft.; dry; to P.B. and reperf.
Maryland Corp. and Renwar Oil Corp. No. 2 Stillwell-Sagarino, Sur. 500. Oil sd. 6,726-37 ft.; hd. sh.; S.O.&G. 6,740-49 ft.; T.D. 6,749 ft.; perf. 6,744-48 ft.; comp.; 90 bbls. oil, 150 bbls. S.W.; ¼-in. ck.
Maryland Corp. and Renwar Oil Co. No. 2-B Morgan, Sur. 415. T.D. 6,238 ft.; sd. 6,111-20 ft.; cutting stuck D.S.
North Star Oil Co. No. 12-E Morgan, sec. 405. Sd. 6,700-53 ft.; set csg.; T.D. 6,946 ft.; W.O.C.
Pan American Prod. Co. No. 2-B Sagarin, Sur. 500. O.W.W.O.; old T.D. 5,827 ft.; cg. 6,897 ft.
Pan American Prod. Co. No. 5 Solar Sevier, Sur. 311. Cg. 6,842 ft.
Phillips Pet. Co. No. 7 Morgan, S½, sec. 405. Oil Sd. 6,895-6,910 ft.; set csg.; perf. 6,880-82 ft.; comp.; 155 B.P.D. on ⅛-in. ck.; perf. 6,870-74 ft.; set 7-in. csg. 6,945 ft.
Richardson Pet. Co. No. 3 Harrell, Blk. 33, Sheppard Farm Lots. Set csg. 6,996 ft.; W.O.C.
Richardson Pet. Co. No. 7 Perkins-Lagasse, Blk. 25, Sheppard Farm Lots. Drlg. 5,547 ft.
Richardson Pet. Co. No. 13 Quiros, Sur. 311. Sd. 6,905-60 ft.; S.O.&G.
Richardson Pet. Co. No. 11 Sedwick, 184-ac. tr., Dunn Sur. 312. Drlg. 6,899 ft.
Southern Minerals Corp. No. 9 Ocker, 205-ac. tr. Set 7-in. csg. 4,863 ft.; sd. 4,862-71 ft.; fsg.
Texon Drlg. Co. No. 5 Vance, Gallagher Sur. O.W.W.O.; old T.D. 6,924 ft.; drlg. sh. 7,592 ft.

Stratton—Nueces County

Camp. Prod. Co. No. 2 Wardner, sec. 13, M.I.M.

Sullivan—Nueces County

Lockhart et al No. 1 O. Purl, Lot 2, sec. 7, Ross Peters Subd. No. 2. Sd. 7,032-52 ft.; P.B. and sdtrkd.; T.D. 7,404 ft.; to P.B.

Midway—San Patricio County

Phillips Pet. Co. No. 4 Ivey, sec. "K," Pauls Subd. Sd. 5,286-5,355 ft.; perf. 5,344-46 ft.; comp.; 138 B.P.D. on 7/64-in. ck.; perf. 5,344-46 ft.

Sun Oil Co. No. 2 Coggin, sec. 82. Oil sd. 5,333-35 ft.; set csg.; W.O.C.; T.D. 5,-338 ft.

Plymouth—San Patricio County

Heep Oil Corp. No. 8-F Welder, sec. 46. P.B. and set csg. 6,015 ft.; perf. 5,919-23 ft.; T.D. 7,253 ft.

Magnolia Pet. Co. No. 13 Corpus Christi Bank & Trust, H. H. Hunter Sur. Set surf. csg. 464 ft.; W.O.C.

Plymouth Oil Co. No. 84-C Welder, sec 70. Drlg. 3,625 ft.

Plymouth Oil Co. No. 85-C Welder, sec. 70. Drlg. 5,427 ft.

Sun Oil Co. No. 3 Roundtree, sec. 34, Lot 4. Perf. 5,636-37 ft.; pmpd. 30 bbls. oil, 50 bbls. S.W.; sanded up; reworking.

Taft Field—San Patricio County

Greta Oil Corp. No. 1 Pullin, Blk. 1, Lot 4. Perf. 4,361-64 ft.; T.D. 4,376 ft.; swg.

Humble O. & R. Co. No. 4 Flinn, R. Ross Sur. Drlg. sh. 638 ft.

Humble O. & R. Co. No. 3 Godwin, 90-ac. tr., Lot 1, sec. 23. Drlg. sh. 4,366 ft

Barbacoas—Starr County

K. E. Merren No. 1-A S.C.C.C., Blk. 34 Lambeth Subd., Porc. 89. Set csg. a T.D. 5,640 ft.; sd. 5,470-91 ft.; C.O.; perf. 5,390-5,417 ft. and 5,417-24 ft.; flwg. dist. and S.W.; C.I.C.P. 1,800 lbs stdg.

Ricaby—Starr County

Conan Wood No. 1 Wardner Est., Porc. 84. T.D. 523 ft.; gas sds. 425-39 ft. and 441-61 ft.; S.W. sd. 498-503 ft.; blew out making 500,000 ft. gas and S.W.; attempting to kill.

Conan Wood No. 2 Wardner Est., Porc. 84. Spd. in; S.D.; T.D. 10 ft.

Dean Bros. No. 1 Valadez, Porc. 84. Sd. 1,863-72 ft.; set 5½-in. csg. 1,872 ft.; T.D. 1,873 ft.; perf. 1,868-72 ft.; 1,200 ft. fluid mostly oil in hole; to put on pmp.

McAlester & Espenlaub No. 1 Wood, Porc. 84. D.&A. 2,005 ft.

Sun Oil Co. No. 5 Wardner, Vela Sur., Porc. 84. Drlg. 130 ft.

Carolina-Texas—Webb County

E. J. Puri et al No. 2 Garza, Sur. 48. Sd. 2,100-07 ft.; T.D. 2,119 ft.; S.D.

Cole—Webb County

French Oil Corp. No. 3 Perez, Sur. 1007. Oil sd. 1,987½-93½ ft.; set csg. 1,987 ft.; W.O.C.

O. W. Killam No. 58 Bruni, sec. 8, Blk. 12. Oil sd. 2,592-94 ft. and 3,413-14 ft.; set 5½-in. csg. 3,398 ft.

Magnolia Pet. Co. No. 3 Valdez, Valdez Sur., Blk. 8. T.D. 3,808 ft.; rng. S.J.

Killam—Webb County

O. W. Killam No. 4 Garcia, Sur. 786. Drlg. 779 ft.

O. W. Killam No. 20 Garcia, Sur. 786. Drlg. 1,658 ft.

O. W. Killam No. 21 Garcia, Owens Sur. 786. Comp.; 150 B.P.D.; open tbg.; sd. 1,976½-84½ ft.; set 5½-in. csg. 1,973 ft.

Rowan & Hope No. 3 Laurel Bros., Sur. 1006. T.D. 1,943 ft.; 7-in. csg. 1,934 ft.; W.O. pmp.

Superior Oil Co. No. 1 Laurel, Sur. 719. D.&A. 2,657 ft.

Lopes—Webb-Duval Counties

C. H. Andrus No. 1 Billings, Sur. 10. Set 5½-in. csg. 2,262 ft.; perf. csg.; tstg.

O'Hern—Webb County

J. Gier and Kone Prod. Co. No. 2 Peters, SW¼, Sur. 38. R.U.

Oilton—Webb County

Bridwell Oil Co. No. 6 Martin, Sur. 2167. Oil sd. 1,910-15 ft. and 1,930-35 ft.; comp.; 150 B.P.D. on pmp.; 7-in. csg. 1,927 ft.

Bridwell Oil Co. No. 7 Martin, Sur. 2167. Drlg. 1,317 ft.

Gypsy Oil Co. No. 1-A Martin, Sur. 3267. Comp.; oil sd. 1,927-28 ft. and 1,935-44 ft.; I.P. 166 B.P.D. on pmp.

Bridwell Oil Co. No. 2-A Martin, Sur. 2167. Drlg. 1,856 ft.

Hamil & Smith No. 19 Martin, Sur. 2167. Comp.; 104 B.P.D. on ⅝-in. ck.; oil sd. 1,884-92 ft.

Hamil & Smith No. 20 Martin, sec. 2167. Set csg. on sd.; W.O.C.

Magnolia Pet. Co. No. 1 Sprague-fee, Blk. 16, Sur. 2161. Oil sd. 1,850-55 ft. and 1,867-81 ft.; comp.; 3,000,000 ft. gas; C.I.C.P. 438 lbs.

Magnolia Pet. Co. No. 2 Sprague-fee, Sur. 2161. Drlg. 520 ft.

Morgan & Kirkwood No. 2 Juarez, Blk. 23, Sur. 1105. R.U.

Morgan & Kirkwood No. 10 Juarez, Blk. 23, Sur. 1108. Oil sd. 1,951-56 ft.; comp.; 110 B.P.D.; pmpg.; T.D. 1,956 ft.

Rowan & Hope No. 4 Laurel, Sur. 1106. Oil sds. 1,908-13 ft. and 1,931-36 ft.; set csg.; comp.; 115 B.P.D.; pmp.; T.D. 1,936 ft.

Rowan & Hope No. 5 Laurel, Sur. 1006. Oil sd. 1,920-24 ft. and 1,941½-46 ft.; set 7-in. 1,941 ft.; W.O.C.

LaSal Vieja—Willacy County

Shell Pet. Corp. No. 2 Yturria, Sh. 64, Carricitos Gr. Drlg. 7,137 ft.

Escobas—Zapata County

Dulup Oil Co. No. 28 Trevino, 326-ac. tr., Sh. 25, Cg. 1,234 ft.

Dulup Oil Co. No. 29 Trevino, Sur. 412, Blk. 25, Cg. 813 ft.

Texas Co. No. 109 Jennings, Cerrito Blanco Gr. Set csg. 1,240 ft.; drlg. plgs.

Lopena—Zapata County

Wm. Winn No. 1 Ramirez, Sh. 2, Jamieson Subd., Porc. 19. Set surf. csg. 120 ft.; W.O.C.

Batesville—Zavalla County

Wilcox O. & G. Co. No. 2 Gillam, G.W.T. &P. R.R. Sur. Loc.

NORTH TEXAS WILDCATS

Archer County

Hamon, Hanlon-Buchanan, Inc., et al No. 1 W. P. Ferguson, sec. 2, H.&G.N. Sur. 6⅝-in. 3,900 ft.; S.L. 3,967-90 ft.; shot 120 qts.; C.O. and tstg.

Baylor County

Hampton et al No. 1 A. G. Cochrell, sec. 2,404, T.E.&L. Sur. S.D.O. 1,385 ft.

Clay County

W. Gant No. 5 C. M. Worsham, D.L.&C.A. Sur. 1073. Set 6⅝-in. 3,900 ft.; tstg. S. L. 3,376-94 ft., "Lane gun."

Healdton O. & G. Co. No. 1 Wallace, Belcher Subd. Drlg. 785 ft.

Cooke County

W. O. Russell No. 1 J. W. Sherrill, Wm. Phelps Sur. A-821. C.O. 1,455 ft.

Denton County

W. C. Curry et al No. 1 G. F. Owens, N. Rudder Sur. A-1060. S.D.O. 620 ft.

Bruce Lee No. 1 Boyles, S. Ross Sur. A-112. Drlg. 1,730 ft.

Scroggins et al No. 1 S. M. Freeman, Bradshaw Sur. A-104. Drlg. 2,180 ft.

Wells-Dodson-Pearson No. 1 Hughes, B.B.B.&C. Sur. A-1252. Drlg. 2,100 ft.

Foard County

Texas Co. No. 14 Johnson, sec. 37, S.P. R.R. Sur., Blk. L. Material.

Grayson County

Denver P. & R. No. 1 Cannon, A. Berry Sur. A-130. Drlg. 5,000 ft.

Pearson Tubing Co. No. 1 J. H. Thompson, W. A. Warner Sur. A-1350. Drlg.

Wichita County

Hammon Hanlon Buchanan, Inc., No. 1 A. F. Fassett, sec. 1, E.T.R.R. Sur. Drlg. 3,815 ft.

Jack E. Kadane No. 1 C. A. Mangold, P. Castleman 35-A. Drlg. 3,278 ft.

LeBus No. 1 J. F. Muier, W. R. Eaves Sur. A-447.Set 6⅝-in. 3,610 ft.; drlg. S.L. 3,839 ft.

W. B. Omohundro No. 1 First Natl. Co., sec. 28, W.V.F.L. Sur. 6⅝-in. 3,687 ft.; drlg. plug.

Patterson et al No. 1 B. C. Ellis, J. Waldschmidt Sur. A-792. S.D.O. 930 ft.

Felix Payne No. 1 P. R. Pace, R. J. Scott Sur. A-253. Spud. & S.D.

E. J. Stump No. 1 M. P. Bishop, L. Netherley Sur. A-240. Set surface pipe; S.D.O. 500 ft.

E. J. Stump et al No. 1 J. and J. Waggoner, W. R. Eaves Sur. A-753. 7-in. cmtd. 3,806 ft.; S.L. 3,840-3,919; treating with acid.

Clyde Texan Oil Fields Co. No. 1 A. W. Burnside, John M. Sharp Sur. A-262. 6⅝-in. 3,851 ft.; S.L. 3,936-50 ft.; shooting; showing oil and gas.

Wilbarger County

Barry & Hayes No. 1 McGill, sec. 3, Blk. 9, H.&T.C. Sur. S.D. 3,030 ft.

King Oil Co. No. 1 R. L. Castleberry, sec 68, H.&T.C. Sur., Blk. 14. O.S. 2,164-90 ft.; tstg.; est 350 to 500 bbls.

W. Little No. 1 A. P. Morris, sec. 3, H.T. &C. Sur., Blk. 14. S.D. 700 ft.

W. W. Woolsey et al No. 1 Waggoner A, sec. 3, S.P.R.R. Sur. A-535. Drlg. 185 ft.

Wise County

W. D. Dilbeck No. 1 J. I. Wilkins, E. Stephens Sur. S.D. 600 ft.

Latex Oil Co. No. 1 C. R. Smith, J. Couch Sur. A-104. Showing gas 3,843-45 ft. 6⅝-in. 3,943 ft.; S.S.O.&G. 3,952-95 ft.; shot 60 qts.; C.O. bridge; tstg.

Young County

C. B. Christie No. 1 S. Dozier, I. L. Hill Sur. A-126. Drlg.

Hickok & Reynolds No. 1 J. J. Martin, C.W. Townsend Sur. A-1642. Drlg. 2,750 ft.

L. A. Long No. 1 F. A. Burnett, E.G. Rector Sur. No. A-239. 6⅝-in. 3,815 ft.; W.O.C.

Lupton & Long No. 1 W. I. Gilmore, J Gilmore Sur. A-2135. H.F.W. 4,105 ft.; S.D.O.

W-K Royalty Co. No. 1 J. A. Wright, J. N. Taylor Sur. A-1243. Drlg. 3,640 ft.

E. C. TEXAS WILDCATS

Anderson County

Humble O. & R. Co. No. 5-A Southern Pine Lbr. Co. Top Georgetown 5,040 ft.

Angelina County

John Coates No. 1 J. L. Russell. Jose Morino Sur., E of Diboll. Drk.

Cherokee County

Merica Oil Co. No. 1 Cherokee Dev. Co., A. J. Acker Sur., 2 mi. E of Maydelle. Drk.

E. H. Moore, Inc., No. 1 Chronister Lbr. Co., 6 mi. N and E of Wells, Tr. 71, Blk. 33, John Durst Gr. Drlg. 4,379 ft.

Falls County

McCleod et al No. 1 F. Bolton, J. R. Cockrill Sur., 4 mi. NW Rosebud. Top Austin 704 ft.; Georgeton 1,402 ft.; drlg. 1,425 ft.

Freestone County

C. E. Rossiter No. 1 J. P. Fulton in J. P. Fulton Sur., 2½ mi. E of Donie. S.D. 956 ft.

Gregg County

Humble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, M. Mann Sur., 2½ mi. SW of Longview Trinity test. El. 272 ft.; Glen Rose 4,876 ft.; drlg. 6,247 ft.

Henderson County

American Liberty Oil Co. et al No. 1 LaRue & Johnson, Blk. 11, P. Jackson Sur., 2 mi. W of LaRue. El. 464 ft.; S.D. 7,520 ft.

S. Hunt et al No. 1 Dillard, H. Jeffries Sur., 16 mi. N of Trinidad. El. 361 ft.; Paluxy 4,689 ft.; drlg. 5,721 ft.

E. B. LaRue et al No. 1 Breedlove & Mills, J. Dunn Sur., 5 mi. NW of LaRue. M.I.M.

Wm. McDougall No. 1 Trinity, F. & S. Land Co., Blk. 1, H.&T.C. Sur. Drk.

Tide Water Assoc. et al No. 2-C McElreath & Suggett, W. P. Wyche Sur. T.D. 9,320 ft.; P.B. to 9,255 ft.; est. 15,000,000 ft. gas.

Hill County

J. Willis No. 1 W. P. Ball, 370 ft. from SE and 200 ft. from SW of 183-ac. tr., S. Marshall Sur., 3 mi. NW of Covington. M.I.M.

Leon County

Kelly & Fox No. 1 Bryant, A. M. Coultern Sur., 1 mi. E of Marquez. S.D.

Limestone County

C. L. Brown No. 27 N. B. Boyd, R. B. Longbotham Sur., 3 mi. S of Wortham. T.D. 1,107 ft.; set csg.

Pure Oil Co. No. 16-T Kendrick, P. Varella Sur., Mexia field. Drlg. 8,464 ft.

Stanolind O. & G. Co. No. 1 T. Norris, in Thresher Sur., 5 mi. N of Kosse; 6,500-ft. test; El. 528 ft.; T.D. 4,901 ft.; making D.S.T.

Nacogdoches County

G. C. Collier and Corley No. 1-A A. T. Mast, 14 mi. SW of Nacogdoches, T. S. Lambert Sur., 750 ft. N of No. 1. El. 198 ft.; drlg. 5,325 ft.

Navarro County

Nowlin et al No. 1 Easterling, J, Mayor Sur., 2 mi. S of Chatfield. R.U.

Mrs. Jane Robinson No. 1 Fortson Bros., Eli Smith Sur., 5 mi. NE Corsicana. S.D. 900 ft.

T. Sharpe et al No. 1 E. B. McDowell, T Jordan Sur., 1½ mi. S of Bassets. Austin chalk 2,835-2,935 ft.; fsg. 2,-970 ft.

Rusk County

J. W. Shipman et al No. 1 Citizens Bank, J. J. Y'Barbo Sur., 4 mi. NE of Henderson. S.D. 4,500 ft.

EAST TEXAS

(Border Counties)

Cass County

American Liberty Oil Co. No. 5 Maxie, John Collom Sur. T.D. 5,905 ft.; rmg.

Ark. La. Gas Co. No. 1 Nellon, Thomas Gillespie Sur. Drlg. 5,100 ft.

Geo. Barham No. 1 Whitfield, R. Bennington Sur. Drlg. 5,065 ft.

Bay Oil Corp. No. 3 Cobb, G. Crowder Sur. Comp.; flw. 12 B.P.H.; T.D. 6,-108 ft.

W. C. Feazel No. 1 Parker, G. Crowder Sur. R.U.

R. W. Norton No. 3 W. E. Starke, 13⅜-in. 250 ft.; 6-in. 5,960 ft.; T.D. 6,025 ft.

R. W. Norton No. 4 W. and E. Starke, D. Gillam Sur. Drlg. 5,773 ft.

Union Prod. Co. No. 4 J. S. Hall, J. N. Jackson Sur. Drlg. 2,683 ft.

Union Prod. Co. No. 2 Thrower. Cg. 5,-856 ft.

United Prod. Co. No. 4 Belote, H. Holbert Sur. 7-in. 5,963 ft.; T.D. 5,982 ft.

United Prod. Co. No. 7 Bewley, H. Holbert Sur. Comp.; 2,500,000 ft. gas; T.D. 5,990 ft.

Marion County—Rodessa

Arkansas-Louisiana Gas Co. No. 2 Emma Ford, A. D. S. Coy Sur. 7-in. 6,098 ft.; T.D. 6,158 ft.

Ark.-La. Gas Co. No. 1 Wade Houston, A. D. S. Coy Sur. 7-in. 6,085 ft.; T.D. 6,125 ft.; tstg.

Fohs Oil Co. No. 3 Mary McReynolds, A. D. S. Coy Sur. Drlg. 4,999 ft.

Fohs Oil Co. No. 1 W. T. Neilon, R. Bennington Sur. Loc. moved to SE cor. 70-ac. Nellon Sur. Drlg. 2,030 ft.

Fohs Oil Co. No. 2 M. Reynolds, A. D. S Coy Sur. T.D. 6,687 ft.; P.B. 6,014 ft.; tstg.

Gulf Prod. Co. No. 2 L. Henderson, R. Bennington Sur. Drlg. 5,677 ft.

Heyser-Heard & Clardy No. 1 L. Henderson, R. Bennington Sur. Drlg. 2,580 ft.

Holcomb & Thomason No. 1-B L. Henderson, U. Ewing Sur. Drlg. 1,122 ft.

Holcomb & Thomasson No. 1 Gray-Taylor, A. D. S. Coy Sur. T.D. 6,094 ft.; tstg.

Mid-Continent Pet. Corp. No. 4 Sory, A. D. S. Coy Sur. Drlg. 5,975 ft.

Shell Pet. Corp. No. 1 L. Henderson Unit, R. Bennington Sur. R.U.

Union Prod. Co. No. 5 Hutchinson, A. D. S. Coy Sur. Drlg. 4,945 ft.

United Prod. Co. No. 3 Hutchinson, A. D. S. Coy Sur. Drlg. 5,621 ft.

United Prod. Co. No. 4 Hutchinson, A. D. S. Coy Sur. Drlg. 6,125 ft.

Panola County

Danciger O. & G. Co. No. 1 Tatum, A Bissell Sur. T.D. 6,514 ft.; 7-in. cmtd.

Magnolia Pet. Co. No. 2 E. A. Hull, Thos Applewhite Sur. T.D. 8,717 ft.; fsg. for D.P.

WEST TEXAS WILDCATS

Andrews County

M. J. Delaney No. 1 E. P. Moore, sec. 12, Blk. A-20, P.S.L. Sur. T.D. 4,579 ft.; testing.

M. S. Forgeron et al No. 1 Lockhart & Brown, C NE¼ sec. 20, Blk. A-41, P.S.L. Sur. S.D. 179 ft.

Gulf Oil Corp. No. 1 State, sec. 8, Blk. 14, T.D. 2,997 ft.; set csg.

Bailey County

Etz & Robinson No. 1 Enochs, Tract 66, League 182, Floyd Co. School Lands Sur. S.D. 1,990 ft.; W.O.C.

J. O. Whittington No. 1 McKelvey, El. 3,942 ft.; drlg. 4,136 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd sec. 66, Blk. 10, G.H.&S.A. Sur. Drlg. 6,125 ft.

Storey No. 1 Wilson, sec. 3, Blk. 212, T.& St.L. Sur. S.D. 2,545 ft.

Cochran County

P. N. Wiggins et al No. 1 Dean, NE cor. League 58, Martin Co. School Lands. T.D. 4,800 ft.; R.U.S.T.

Pete Wiggins et al No. 1 C. Slaughter Dean, C Lab. 26, League 92, Lipscomb Co. Sch. Ld. T.D. 5,030 ft.; shot; C.O.

Concho County

Sam Murray No. 1 R. G. Armor, sec. 105, T.&N.O. Sur. Spudded and S.D.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, sec. 39, Blk. W, T.&P. Sur. Drlg. 937 ft.

H. E. Ogden et al No. 1 Rawlins, sec. 390, Blk. B-21. S.D. 515 ft.

Crane County

Wilcox O. & G. Co. No. 1 McKnight, sec. 9, Blk. 46, Twp. 3s, G.M.M.B.&A. Sur. T.D. 6,177 ft.; pipe stuck.

Crockett County

Moore Bros. No. 1 P. Perner, sec. 37, Blk. 2, I.&G.N. Sur. Drlg. 6,566 ft.

Stewart & Cormas No. 1 Hoover, sec. 1, Blk. FF, B.B. Sur. T.D. 1,100 ft.; U.R. csg.

Culberson County

C. A. Jarrell et al No. 1 C. M. Caldwell, C of SW¼ sec. 15, Blk. 100, P.S.L. Sur. S.D. 1,514 ft.

Dawson County

R. Albaugh No. 1 D. Hogg, SE of SE sec. 17, Blk. 34, Twp. 4n, T.&P. Sur. S.D. 3,832 ft.; sulfur wtr.

E. L. Wilson No. 1 Scanlon, Sec. 83 Blk M, E.L.R.R. Sur. S.D. 4,965 ft.; P.B. to 4,933 ft.; S.D.

Dickens County

C. E. Litchfield No. 1 Harris, sec. 354, Blk. 1, H.&G.N. Sur. S.D. 1,602 ft.

J. F. Morrisey et al No. 1 C. L. Bird, sec. 290, Blk. 1, H.&G.N. Sur. S.D. 1,100 ft.

Edwards County

A. P. Carter No. 1 F. D. Sweeten, S&E sec. 48, Blk. 2, B&B Sur., 1½ mi. E of Rock Springs. Fsg. 5,096 ft.

Fisher County

I. J. Allen No. 1 H. S. Newman, Lot 49, Bastrop Co. Sch. Lds. Drlg. 1,731 ft.

Bond Oil Corp. No. 1 N. Bertram, 1 mi. S of Sylvester. Drlg. 1,732 ft.

Consolidated Oil Co. et al No. 1 Florida. Drlg. 3,125 ft.

General Crude Oil Co. No. 1 Morrow, sec. 185, Blk. 2, H.&T.C. Sur. T.D. 297 ft.; W.O.C.

Gaines County

Amerada Pet. Corp. No. 1 Matthews, sec. 417, Blk. G, C.C.S.D.&R.G.N.G. Sur. T.D. 5,018 ft.; P.B. to 4,997 ft.; shut in.

A. G. Carter et al No. 1 Giesecke, NW cor. Labour 1, League 296, Reagon Co School Lds. Loc.

Continental Oil Co. No. 2 Jones, sec. 1, Blk. A-8, P.S.L. Sur. Drlg. 3,847 ft.

R. H. Gill No. 1 S. R. Simpson, sec. 8, Blk. C-44, P.S.L. Sur. Drlg. 5,262 ft.

Shell Pet. Corp. No. 1 Robertson, sec. 344, Blk. G, T.D. 454 ft.; set csg.

Garza County

M. L. Richards No. 1 Slaughter. Drlg 700 ft.

Hockley County

The Texas Co. No. 2 Slaughter, Labour 92, League 37, Zavalla Co. Sch. Lds. R.U.R.

Howard County

W. F. McDermott et al No. 1 Lucas, sec. 18, Blk. 29, Twp. 1n, T.&P. Sur., 5 mi. N of Dodge pool. Drlg. 1,367 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ sec. 34, Blk. 74, Twp 6. Drlg. 3,213 ft.

Haymon Krupp No. 1 Briggs, sec. 24, Blk 73, Twp. 7, T.&P. Sur. Drlg. 900 ft.

Jeff Davis County

H. D. Wilcox et al No. 1 Jones-Coffield. S.D. 3,315 ft.; straight reaming.

Loving County

Barnett Pet. Co. No. 1-A Johnson, sec 2 Blk. 57, Twp. 1, T.&P. Sur. Drlg. 2,-022 ft.

Barnett Pet. Corp. No. 1-B W. D. Johnson, sec. 12, Blk. 56, Twp. 1, T.&P. Sur. T.D. 3,174 ft.; to P.B.

Carpenter & Grierson No. 1 Mrs. Bennie Barnes, sec. 22, Blk. C-25, P.S.L. Sur. Loc.
Continental Oil Co. No. 1 E. C. Marrs, sec. 20, Blk. 54, Twp. 2, T.&P. Sur. Drlg 4,320 ft.; top Delaware L. 4,227 ft.; struck wtr.

Martin County

J. L. Green et al No. 1 O. B. Holt, C of Labour 20, Lge. 319, Garza Co. Sch Lds. Drlg. 1,717 ft.

Nolan County

M. S. Ingleright & L. E. Hults No. 1 Blank, Blk. 1-A, H.&T.C. Sur., near Decker. S.D. 4,063 ft.

Pecos County

Adams No. 1 A. A. Gray, sec. 593, Blk. 105, G.C.&S.F. Sur., 12 miles N of Fort Stockton. Loc.
Messenger & Osburn No. 1 Humble-Young, sec. 49, Blk. 10, H.&G.N. Sur. T.D. 1,807 ft.; to acidize.
S. Thompson No. 1 Elsinore Cattle Co sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. by drill stem 5,444 ft.
Trans-Pecos Oil Co. No. 1 Popham. T.D. 535 ft.; lost hole; skd. 25 ft. south; S.D. 1,120 ft.
W. K. Tuller No. 2 Perry. S.D. 1,934 ft.; est. 20 bbls. day.
Wilcox O. & G. Co. No. 1 Serf, sec. 27, Blk. 130, T.&St.L. Sur. Loc.

Presidio County

L. C. Brite No. 4 fee, C NW¼ sec. 113, Bl 12, G.H.&S.A. Sur. Drlg. 3,100 ft. in new hole.

Reagan County

K. E. Sherman No. 1 W. E. Friend, SW Wm. Allen Sur. S.D. 2,405 ft.
Moore Bros. No. 1 University, sec. 8, Blk. 7. Fsg. 2,960 ft.

Reeves County

Barnett Pet. Corp. No. 1 Ely, sec. 38, Blk 71, P.S.L. Sur., 12 mi. NW of Toyah. S.D. 1,400 ft. W.O.C.

Runnels County

Homer Price No. 1 Beddo, sec. 51, Thompson Casey Sur. Drlg. 1,463 ft.
K Z Oil Co. No. 1 B. Fletcher, Lu. C. Goo. Sur. S.D. 3,630 ft.
Stephenson & Glober No. 1 Fowler, sec 150, E.T.R.R. Sur., 2 mi. NE of Ballinger. T.D. 1,095 ft.; S.D.

Schleicher County

J. M. Cooper No. 2 B. Page, sec. 40, Blk G.H.&S.A. Sur. T.D. 4,710 ft.; drlg. by csg. lost in hole.
Tex.Tor Oil Corp. No. 1 Judkins & Spencer, C of SW¼ sec. 33, Blk. A, A.&B. Sur. T.D. 3,755 ft.; U.R. csg.

Scurry County

Robinson Drlg. Co. No. 1 Martin, sec. 147, H.&T.C. Sur. Drlg. 2,234 ft.
T. G. Shaw Oil Co. No. 1 First Natl. Bank, Drlg. 2,150 ft.

Sterling County

Wilcox O. & G. Co. No. 1 Kinnebrew Est sec. 101, Blk. 2, H.&T.C. Sur. T.D 2,600 ft.; U.R. csg.
Snowden & McSweeney No. 1 Harris, sec 110, Blk. 6, H.&T.C. Sur., 20 mi. SE of Sterling City. S.D. 1,358 ft.

Sutton County

Ordovician Oil Co. No. 1 Evans, sec. 1, L. Stubblefield Sur., 32 mi. SE of Sonora. T.D. 3,355 ft.; set pipe.

Terrell County

D. & S. Oil Co. No. 1 Sam Bell. S.D. 345 ft.

Tom Green County

Humble O. & R. Co. No. 1 Lewis & Ward law, sec. 5, Blk. 17, H.&T.C. Sur. Fsg. 1,545 ft.

Ward County

L. F. White et al No. 1 Rector-Monroe, E cor. sec. 3, Blk. 1, W.&N.W. Sur. Top Del. L. 4,635 ft.; top Del. sd. 4,670 ft.; T.D. 4,710 ft.; C.O.

Yoakum County

American Liberty Oil Co. No. 1 Claywater. T.D. 5,083 ft.; tstg.
J. W. Murchison et al No. 1 Sawyer, SE¼ sec. 702, Blk. D. Cellar.
Denver Prod. & Ref. Co. No. 1-A Whittenburg, sec. 830, Blk. 4. Drlg. 3,548 ft.
J. L. Greene et al No. 1 Nevels, sec. 709, Blk. D. Drlg. 4,321 ft.
Skelly and Sun Oil Co. No. 1 Kiser, sec. 640, Blk. D. Drlg. 4,573 ft.
Standard of Texas No. 1 M. B. Sawyer sec. 576, Blk. D, J. H. Gibson Sur. Tstg. 5,375 ft.
L. Stogner et al No. 1 J. A. Blade., sec. 103, Blk. D. Loc.
Texas Co. No. 1 Walker, sec. 794, Blk. D El 3,656 ft.; T.D. 5,180 ft.; P.B. to 5,162 ft.; shot; acid.; swbg. oil and wtr.
P. N. Wiggins et al No. 1 Bartlett, sec. 359, Blk. D. T.D. 190 ft.; drlg. 1,300 ft.

RANGER (CENTRAL TEXAS) DISTRICT

Brown County

C. R. Cox, Tr., No. 1 Jan Lee, sec. 11, B.B.B.&C. Sur., NE cor. county. S.D. 240 ft.
R. A. J. Cox et al No. 1 H. A. Nichols, 10 mi. SE of Cross Cut, F. Wardszisk Sur., sec. 477. T.D. 2,550 ft.; prep. to shoot.

Callahan County

R. F. Gilman et al No. 1 W. A. Young, 5 mi. NW Clyde, sec. 37, B.B.B.&C. Sur. Mov. in.
Hal Hughes No. 1 Poindexter, sec. 350, Geo. Hancock Sur., 2 mi. NE of Oplin. Drlg. 2,595 ft.
J. C. Jackson et al No. 1 Thompson, 2 mi. S. Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,500 ft.
Phillips Pet. Co. No. 1 Cozart, 1 mi. NW Scranton, M. Cherry Sur. Drlg. 1,015 ft.
Walker & Webb No. 1 Ross, 1 mi. NE Clyde, sec. 81, B.B.B.&C. Sur. Drlg. 175 ft.
Woodley Pet. Co. No. 1 Flores-Deep, 5 mi. SE Baird, 660 ft. from S and E of NW¼ sec. 149, B.B.B.&C. Sur. Spdg. for 4,000-ft. test.

Coleman County

J. F. Brock No. 1 J. H. Livingston, SE cor. SW¼ county, J. D. Waters Sur. No. 208. Mov. in.
Dixie O.&G. Co. No. 1 Reaves, 6 mi. NW Bangs, J. M. Rhine Sur. No. 629. S.D. 805 reprs.
J. E. Ellis No. 1 Horseman, 6½ mi. SE Santa Anna, 450 ft. from S and 1,900 ft. from W of Block 2, R. Perry Sur. No. 195. Drlg. 1,025 ft.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I. Terry, Desdemona pool, N. H. Kuykendall Sur. S.D. reprs. 4,280 ft.
Dobbs Oil Co. No. 1 Hodges, sec. 11, Blk. 2, H.&T.C. Sur. Drlg. 1,370 ft.

Eastland County

G. D. Chastain et al No. 1 Weddington 4 mi. N Cisco, sec. 496, S.P.R.R. Sur. T.D. 2,080 ft.; comp. fsg. job; prep. to D.D.
Hickok Prod. & Dev. Co. No. 1 Van Parmer, NW cor. county, sec. 477, S.P.R.R. Sur. Drlg. 3,585 ft.
J. D. Kittrell No. 1 Reynolds, 5 mi. E of Carbon, sec. 23, H.&T.C. Sur., Blk. 1. Drlg. 732 ft.
Monark O. & G. Co. No. 1 Downtain, sec. 14 H.&T.C. Sur. Blk. 4, 3 mi. N Eastland. S.D. 2,140 ft.

Erath County

Arnold Oil Co. No. 1 McMillan, 2 mi. SE of Desdemona, T. H. Dixon Sur., Abst. 1,103. Drlg. 1,625 ft.
J. Hickey et al No. 1 Smith, 5 mi. SE Desdemona, 330 ft. from N and 1,050 ft. from E of J. B. Smith Sur. Drlg. 1,850 ft.
Hoffman & Page No. 1 Clayton, D. J. O. Millard Sur., 2 mi. SE Desdemona. Drlg 2,650 ft.

Haskell County

E. W. Marland & H. B. Drake No. 1 Corothers, 6 mi. S Haskell, sec. 67, D. E. Zaaz Sur. T.D. 3,440 ft.; U.R. 6-in.

Jack County

J. P. Burrus No. 1 W. J. Eatherly, J. Helmstutler Sur. S.D. 2,130 ft.
H. B. Madden No. 1 J. L. Mask, sec. 2708, T.E.&L. Sur. S.D. 3,000 ft.
Panhandle Ref. Co. No. 1 D. R. Sewell, 4 mi. E of Bryson, Mary Hamilton Sur., Abst. 262. Sd. 3,049-62 ft.; T.D. 3,256 ft.; P.B. 3,065 ft.; tstg.
Perren & Gillespie No. 1 Clayton Bros., L. Knight Sur., Abst. 324, 2 mi. NE Bryson. Drlg. 1,800 ft.
O. J. Perrin No. 1 J. S. Rhodes, 3 mi. NE Bryson, J. W. Coates Sur. Loc.
Taubert & McKee No. 1 Eatherly, 3 mi. NW of Gibbtown, SE cor. county. J. H Henderson Sur. Spd. and S.D.
Joe Worsham et al No. 1 Cash, 3½ mi. NE of Bryson, I. White Sur., Abst. 895. T.D. 3,210 ft.; prep. to shoot.

Jones County

Butler & Horne No. 1 Mrs. R. Cox, 6 mi E. Hamlin, sec. 3, G.H.&H. Sur. U.R. 8¼-in. 2,100 ft.
E. P. Campbell et al No. 1 L. H. Lee, 5 mi. S Hawley, sec. 16, T.&P. Sur., Blk. 16. Drlg. 800 ft.
Fain, McGaha & Roberts No. 1 Daugherty, 2 mi. S Sandy Ridge pool, sec. 37, T.&P. Sur., Blk. 15. Drlg. 1,690 ft.
Fain & McGaha Oil Corp. No. 1 Francis Olson, 3 mi. NE Avoca, sec. 190, B.B.B. &C. Sur. Drlg. 2,300 ft.
Falls Ref. Co. No. 1 Harris, 4½ mi. NE Hawley, sec. 47, T.&P. Sur., Blk. 15. Drlg. 2,000 ft.
Felmont & Adams No. 1 Woodson, 1½ mi SE Avoca, sec. 200, B.B.B.&C. Sur. Drlg. 1,800 ft.
Mack Hayes and Montour Oil Co. No. 1 Chittenden, 7 mi. SE Hamlin, Subd. 18, McMullen & McGloin Sur. 337. M.I.M.
W. L. Herring et al No. 1 J. W. Grogan, ½ mi. SE Truly, Maria Rita Longario Sur. Drlg. 1,600 ft.
T. D. Humphrey No. 1 Fielder, 2½ mi. E Anson, sec. 34, O.A.L. Sur. Rigging up machine.
Iron Mountain and Humble No. 2 Jones & Stasney, 3 mi. NE of Avoca, sec. 196, B.B.B.&C. Sur. Sd. 1,582 ft.; L. 1,580-87 ft.; T.D.; treated 2,000 gals. acid; well went dead; drlg. 1,750 ft.
Maro Oil Co. No. 1 Webb, sec. 2, C.&M. R.R. Sur., ¾ mi. NW Lueders. Drlg. 800 ft.
M. A. Mead No. 1 H. Osment. Drlg. 900 ft.
Oil States Expl. Co. No. 1 Olson, 4 mi. N Avoca, sec. 182, B.B.B.&C. Sur. Drlg. 1,445 ft.
Owen M. Murray et al No. 1 Rial, 2 mi. E Avoca, sec. 198, B.B.B.&C. Sur. Drlg. 1,050 ft.
Riddle et al No. 1 J. D. Freeman, 8 mi. SW Anson, sec. 6, T.&P. Sur., Blk. 17. T.D. 2,487 ft.; S.D. 2,487 ft.
Roeser & Pendleton No. 1 Rosenquist, 4½ mi. NE of Avoca, sec. 181, B.B.B.&C. Sur. Drlg. 2,900 ft.
Shaheen Oil Co. et al No. 1 Jenson, 2 mi. E of Avoca, sec. 198, B.B.B.&C. Sur. Drlg. 1,800 ft.
Southern Oil Co. No. 1 B. W. Thane NE cor. County. Andrew Jones Sur. 114 T.D. 2,247 ft.; drlg. 2,840 ft.
Stanton & Miller No. 1 Gaither, 4½ mi. N of Anson, sec. 38, B.B.B.&C. Sur. Drlg. 1,625 ft.
Ungren & Frazier et al No. 1 Carl Ecdahl, 3½ mi. NE Avoca, sec. 188, B.B.B.&C. Sur. T.D. 2,240 ft.; drlg. 2,500 ft.
C. E. Waite, Trust, No. 1 Ray, 3½ mi. SE of Stamford, sec. 7, D.&D.A. Sur. Drlg. 1,560 ft.

Palo Pinto County

W. H. Clement No. 1 Federal Life Ins Co., 2 mi. W Mineral Wells, sec. 51, T.&P. Sur., Blk. A (E of B). S.D. for pipe 400 ft.
Bill Cole et al No. 1 J. W. Harris Est., NW cor. county, De La Garza Sur. Drlg
Paul Garrett No. 1 Mabry heirs, NE cor. County, sec. 2,572, T.E.&L. Sur. S.D. 470 ft.
W. K. Gordon et al No. 1 Johnson, 5 mi. N Gordon, John Bird Sur. R.U.
Henry Hobbs et al No. 1 Bessie Holt, 4 mi. S. Graford, sec. 1,783, T.E.&L. Sur. S.D. 200 ft.
Ernest Lloyd et al No. 1 McClure, 3 mi. NE Graford, sec. 2,004, T.E.&L. Sur. S.D. 1,200 for csg.
Lone Star Gas Co. No. 1 Hart Oil Corp CWL county, sec. 19n, T.&P. Sur., Blk 3, 4,000-ft. test. Drlg. 3,872 ft.

Shackelford County

Joe DeGrazier No. 1 Harbough, E cen. part of county, sec. 1,563, T.E.&L. Sur. 4,500-ft. test; R.U.C.T.
Forest Dev. Co. No. 1 Hendrick, NW cor. county, sec. 12, A.B.&M. Sur., but in sec. 1, Blk. A, A.B.&M. Sur. Pits.
T. D. Humphrey No. 1 Alston, NE cor. county, sec. 16, H.&T.C. Sur., Blk. 3. Drlg. 825 ft.
C. J. Kleiner et al No. 1 Morris, 2 mi. NE Bluff Creek pool, 220 ft. from N and E of sec. 187, E.T.R.R. Sur. Loc.
Mesa Verde Oil Co. No. 1 Hennessey, 7 mi. E of SW cor. county, 150 ft. from N and 1,350 ft. from E of sec. 87, T.&P. Sur., Blk. 13. Moving in.
Owens-Snebold Oil Corp. No. 1 Haterius sec. 163, B.B.B.&C. Sur. T.D. 1,700 ft.; fsg.

Stephens County

Barnett Pet. Corp. No. 1 J. Q. Corbett, 4 mi. SE Ivan, sec. 3, S.P.R.R. Sur., Blk 3. Marble Falls 3,994-95 ft.; est. 10,000 000 ft. gas; T.D. 4,005 ft.; tstg.; est. 50 bbls. oil and 5,000,000 ft. gas per day.
Clark & Cowden et al No. 2 Echols Heirs Blk. 3. T.D. 4,017 ft.; fsg.
W. B. Hamilton No. 1 B. O. Grant, CWL of county, sec. 63, B.A.L. Sur. 2,500-ft test; T.D. 2,052 ft.; drlg. 2,465 ft.
O. J. Perren No. 1 J. h. P. Hughes, NE cor County of NW¼ sec. 6 A.B.&M Sur., Abst. 2,683; P.B. to 3,970 ft.; drlg. by whipstock.

Stonewall County

General Crude Oil Co. No. 1 B. F. Harrison, NW cor. D. Harcrow Sur., 1½ mi. N of No. 1 Bryan. Drlg. 3,210 ft.

Tarrant County

E. E. Hoffpauir et al No. 2 W. H. Davis 2 mi. S Arlington, H. Blackwell Sur S.D.O. 2,140 ft

Taylor County

Bert Fields et al No. 1 Sears, sec. 223, Blk. 64, H.&T.C. Sur. Spudded.
Dale H. Dorn No. 1 Hopkins, 1 mi. NW View, 330 ft. from N and W of S½ Subd. 20, sec. 120, Guadalupe Co. Sch. Ld. Sur., S.D. 2,325 ft.
A. Findley No. 1 Bowles Est., NE cor county, sec. 26, B.A.L. Sur. S.D. 1,900 ft.

Wise County

Latex Oil Co. No. 1 Smith, 3 mi. E of Bridgeport, Jas. Couch Sur. T.D. 4,075 ft.; shot 60 qts. 3,965-85 ft.; C.O. bridge; testing.

Canadian Fields

(Continued from Page 154)

Clancey sand at 3,220 feet and was deepened about 5½ feet into the sand. Crude rose rapidly in the hole and potential pumping production is estimated 60 bbls. a day or better. Plains No. 1, LSD 14, section 29-9-17w4, cemented on top of the Ellis sand at 3,310 feet, is being drilled in. Plains No. 3, section 26-9-17w4 is standing cemented at 2,780 feet.

East-Central Alberta

In East-Central Alberta, Altoba Gas & Exploration Co. has located a test in section 35-47-7w4, 8 miles west of Battleview Oils No. 1 gasser on the Battleview anticline. Contract has been let to Nelson Story Hogan, Ltd., of California, and combination equipment is being moved in.

Ontario Operations

In the Brownsville field, Oxford County, Ontario, Central Pipe Line Co. No. 1, Clarke lease, SE¼ Lot 26, Concession 11, Dereham Township, finished at 940 feet with a flow of 3,250,000 feet a day. It indicates the probability of an important extension northwest. In the same field, a test by Reed & Adams finished at 930 feet with 4,400,000 feet a day open flow. Aloka Oil & Gas Co. No. 16 is being started in Lot 23, Concession 12, Dereham Township. Southwest of the field, in Elgin County, Aloka-Kidd No. 1 has been spotted in Lot 6, Concession 8, Bayham Township.

In the Eden field, Middleton-Norfolk Gas & Oil Co. No. 4 has been started in Lot 6, Concession 2, Middleton Township, Norfolk County.

In Essex County, Eugene Coste & Co. No. 2 is being started in Lot 6, Concession 3, Tilbury North Township.

In East Nissouri Township, Oxford County, Volcanic Oil & Gas Co. No. 3 is being started in Lot 25, Concession 10. This is an extension of the wildcat drilling in North Easthope Township, Perth County, where two dry holes were drilled by the same company.

Expo Safety Committee

The safety committee of the International Petroleum Exposition has been organized and is making plans for the safety day at the tenth show to be held May 14 to 21, J. D. McCamey, Carter Oil Co., chairman of the committee, announced recently.

The committee subdivisions follow: Mid-Continent petroleum safety conference, E. D. Murphy, Mid-Continent Petroleum Corp.; first aid demonstration, R. S. Huffman, Oklahoma Natural Gas Co., chairman and F. F. Thomason, Sinclair Prairie Oil Co.; first aid committee, H. T. Markee, Phillips Petroleum Co., chairman; Kraus Erhart, Texas Co.; F. K. Dalrymple, Tide Water Oil Co.; H. W. Richards, Mine Safety Appliance Co., and J. H. Savage, Mid-Continent Petroleum Corp.; equipment guards committee, H. W. Boggess, Sinclair Prairie Oil Co., chairman; L. E. Jennings, Stanolind Pipe Line Co.; A. H. Lauck, state department of labor, and C. L. Swim, Skelly Oil Co.; banquet committee, J. C. Young, Tide Water Oil Co., chairman; D. J. Wallace, Sinclair Prairie Oil Co., and R. J. Lauter, Shell Petroleum Corp.; publicity committee, H. H. Myers, Sinclair Prairie Oil Co., chairman, and F. K. Dalrymple, Tide Water Oil Co.

STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	Sept. 30, 1937	Aug. 31, 1937	Sept. Changes	Sept. 30, 1936
1. Fuel oil residuum and nongasoline-bearing crude	63,199,156	62,430,828	+768,328	64,548,030
2. Gas oil and diesel oil	6,909,395	6,479,092	+430,303	9,010,602
3. Gasoline-bearing crude	30,642,228	31,185,125	—542,897	34,116,257
4. Unblended natural gasoline	2,210,146	2,639,774	—429,628	2,062,041
5. Gasoline (not including distributing and service stations	10,930,937	10,489,889	+441,048	11,014,468
6. Naphtha distillates	*1,946,166	*1,945,097	+1,069	*1,819,753
7. All other stocks	†5,935,837	†6,054,279	—118,442	†8,335,493
Total	121,773,865	121,224,084	+549,781	130,906,644
*Estimated amount of unfinished gasoline contained in item No. 6	1,582,224	1,608,405		1,460,427
†Coke included in item No. 7	46,571	64,783		291,849

PERSONAL

E. G. BAILEY, vice president of the Babcock & Wilcox Company, New York, and president of the Bailey Meter Company, Cleveland, Ohio, received the honorary degree of doctor of engineering at the recent Founder's Day exercises of Lehigh University in Bethlehem, Pa. The degree was awarded for "notable and distinguished accomplishment in the field of combustion and steam engineering."

EDUARDO CARLOS LAZO, petroleum inspector for the Mexican government in the Tampico area, state of Tamaulipas, is touring the Mid-Continent. He represented his country Tuesday and Wednesday of last week at the dedication of the Bureau of Mines administration building, in Bartlesville, Okla. While in this country he is looking over various oil fields with particular reference to details and practices in state conservation policies. A niece, MISS S. OTILA, is a teacher in Pawhuska, Okla.

W. C. WHALEY, EMIL KLUTH, W. L. BAGBY, A. C. BUSH, L. D. FESLER, A. J. CRITES, J. H. SARGENT, T. R. TINKER and J. R. HARMON have been reelected oil and gas commissioners of the California Division of Oil and Gas. They will serve three years.

GEORGE WEHRLE, superintendent of the gas department of the Public Service Company of Colorado, Denver, received the Charles A. Munroe award at the annual convention of the American Gas Association in Cleveland, Ohio. The award, conferred for the most outstanding contribution of an individual toward the advancement of the gas industry, was made in recognition of Mr. Wehrle's distinguished work in handling problems involved in converting the Denver system from manufactured to natural gas in 1928, along with other problems which have arisen since that year.

W. R. MILLER, Mattoon, Ill., and GEORGE W. DERRICK, Tulsa, both veteran oil men, along with several business men of central and southern Illinois, have organized Illinois Oil Developers, to drill on leases in that state. Mr. Miller is manager of the new company and has offices in Mattoon. Mr. Derrick is engineer.

HOUSTON HILL, independent operator; ROY STEWART, Westbrook-Thompson Holding Company; JACK LOFFLAND, drilling contractor; ARCH ROWAN, drilling contractor, and RICE TILLEY, attorney, were among Fort Worth, Tex., oil men in New York on the occasion of the T.C.U.-Fordham football clash last Saturday. AMON G. CARTER, oil man and publisher of the Fort Worth Star-Telegram, was there, accompanied by his oil editor, JOHN W. NAYLOR. Other Texas oil men who saw the game were NEVILLE PENROSE, STANLEY A. THOMPSON, R. B. OWINGS, RALPH BRISTOL; GEORGE A. DONNELLY, president of Eastland Oil Company, and FRED HYER, discoverer of the first oil production in Howard County, Texas. Wives of the six men accompanied them.

C. N. VALERIUS has been transferred from Tulsa to Shreveport, La., as land man for the Barnsdall Oil Company in the Ark-La-Tex area.

PAUL E. TALIAFERRO, general counsel for the Sunray Oil Company, Tulsa, accompanied by MRS. TALIAFERRO, is on vacation in Texas.

HARRY BASS, drilling contractor and independent operator of Dallas, Tex., with his family, is spending a vacation in eastern points, principally New York.

J. S. FREEMAN, assistant to H. M. STALCUP, vice president of the Skelly Oil Company, Tulsa, is at the Jack Butler camp, Kanab, Utah, hunting for bears in the mountains of that region.

HAROLD WYATT, production manager of the Shell Oil Company in Bakersfield, Calif., has been on a vacation in the East, his place being filled during his absence by CLAUDE PEAVY, general production superintendent.

A. D., J. M., L. E. and M. E. ROBERTS, comprising Roberts Brothers, independent producing firm in the East Texas field, have moved their headquarters from Henderson, Tex., to Shreveport, La. They are developing some newly proven properties on the Arkansas side of the Rodessa field.

R. T. CHALLENDER, head of the engineering department of Montana State College, was elected president of the Montana Society of Engineers at the recent convention in Butte, Mont. Other officers elected were G. G. GRISWOLD, JR., Butte, first vice president; F. A. LINFORTH, Butte, second vice president; PROF. G. L. SHUE, Butte, secretary-treasurer.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

A party of Gulf Pipe Line Company officials, headed by W. L. Mellon, chairman of the board, are looking over the company's Oklahoma properties.

Theodore N. Barnsdall is negotiating for the sale of some of his oil and gas properties in Oklahoma and Kansas to Henry L. Doherty & Company, of New York.

Charles B. Shaffer, of Pittsburgh, Pa., is the largest producer in the Cushing field, opened in March, 1912.

Ray M. Collins, oil producer of Tulsa, and Miss Clarissa June Hubbard of Bradford, Pa., were married on October 26, in Bradford.

C. W. Titus, Robinson, Ill., oil producer, and Miss Odessa Kessler of Robinson, were married on October 24, in that city.

20 YEARS AGO

The capital stock of the Carter Oil Company has been increased from $50,000 to $4,360,810 and the increase is approved by Kansas State Charter Board.

Joseph Reid, 74, founder of the Joseph Reid Gas Engine Company, dies in Oil City, Pa., on October 23. Heart disease was the cause of death.

Three hundred wells are drilling in the Butler County, Kansas, field. October's completions in that field numbered 143 oil wells and 16 dry holes.

Dynamiters partially wreck the home of Edgar W. Pew, general manager of the Carter Oil Company, in Tulsa. No one was injured. I. W. W. agitators are suspected of the crime but no one can give an excuse for the outrage.

10 YEARS AGO

Wells in Winkler County, Texas, coming in at 250 barrels per hour and a well in the Yates field, Pecos County, Texas, starting at 835 barrels per hour are highlights.

J. H. Greer becomes general superintendent of production for the Pure Oil Company in Tulsa.

EARL M. PRICE, independent oilfield map maker, has returned to California after six months in Europe with MRS. PRICE.

CHARLES JOHN, scout for the Pure Oil Company in the Corpus Christi, Tex., office has returned after a transfer of several months in Illinois.

CHET INMAN, in charge of the San Joaquin Valley division for Bell & Loffland, drilling contractors, has established his headquarters in Bakersfield. His crews are drilling 12 wells.

J. S. HUDNALL, consulting petroleum engineer of Tyler, Tex., and W. W. TROUT, of the Lufkin Foundry & Machine Company, Lufkin, Tex., have been appointed by GOV. JAMES V. ALLRED to the State Board of Registration for Professional Engineers.

OSCAR WALTON, geologist for the Atlantic Refining Company in Shreveport, La., has been transferred to the Corpus Christi, Tex., office of the company as district geologist, succeeding H. N. SEEVERS, who resigned.

J. M. FLAHERTY, president, will have charge of the first fall meeting Friday evening, October 29, of the Petroleum Accountants Society, Tulsa. Other officers for the year are R. L. RUSH, Sinclair Prairie Oil Company, first vice president; J. C. FERVAY, Skelly Oil Company, second vice president, and M. H. MASSEY, Stanolind Oil and Gas Company, secretary-treasurer. Objects of the society now entering its ninth year are to "develop, improve and extend, and so far as possible, standardize petroleum accounting."

PARAGRAPHS

H. M. STALCUP, vice president in charge of production of the Skelly Oil Company, Tulsa, spoke at the University Club in that city last Monday evening before the Technical Club, composed of production engineers and others in the oil industry. Mr. Stalcup related stories of his recent bear hunt in Wyoming and showed motion pictures taken on the trip.

JOE S. BOYLAN, safety director of the Continental Oil Company, Ponca City, Okla., received for his company at the recent annual meeting of the National Safety Council in Kansas City, Mo., a bronze plaque awarded in recognition of the best safety record in 1936 in the three branches of the oil industry—production, manufacturing and marketing. This is the first time that any major company has won all three awards, according to W. H. CAMERON, managing director of the National Safety Council. It is the fourth consecutive year that Continental has received the first award for safety in its production department, and the third straight year it has taken first in marketing.

M. L. DEL MONTE, of the Union Oil Company's manufacturing department at the Oleum refinery in the San Francisco Bay region, and C. W. BURTLESS, of the company's Santa Paula, Calif., refinery, have been awarded diamond service pins upon completion of 30 years of continuous employment.

E. I. HANLON, president of the Hanlon Gasoline Company and associated companies, Tulsa, and chairman of the board of the National Bank of Tulsa, is back from a European tour which began last May. Mr. Hanlon attended the World Petroleum Congress in Paris and then devoted his time to business missions, intermixed with sightseeing. Shortly before his return one of his friends received a postcard from him bearing the message, "Kissed the blarney stone twice and now am full of conversation."

FRANK E. HOLSTEN, Tulsa, vice president in charge of manufacturing of the Barnsdall Refining Corporation, Tulsa, accompanied by MRS. HOLSTEN, is combining business and pleasure in a trip to San Francisco and Los Angeles, Calif.

E. WHITEHEAD, manager of the fuel oil department of the Associated Division, Tide Water Associated Oil Company, Los Angeles, recently celebrated his thirty-fifth anniversary with that organization in California. Mr. Whitehead has been with the Associated Oil Company since it was founded in 1902. Born in Kansas City, he went to California as a boy in 1885. Subsequently he returned to the East and received his education in Ohio. Incidentally he stood high as a baseball player. Returning to California in 1903, he was employed by the Santa Fe Railroad. He left it to become one of the organizers of the Associated.

A. G. GUYMARD, petroleum engineer for the Stanolind Oil & Gas Company, Houston, Tex., is spending his vacation in Baton Rouge, La.

ROY SALLADY, superintendent for Chanslor-Canfield Midway Oil Company in the San Joaquin Valley, has returned to his office in Fellows, Calif., after an absence due to illness.

ROBERT BANE, safety engineer for the General Petroleum Corporation, recently returned to his Los Angeles office from a successful deer-hunting trip on Hat Creek in Shasta County, California.

SAMUEL MESSER, vice president of the Quaker State Oil Refining Corporation, has been elected chairman of the Associated Petroleum Industries of Pennsylvania, succeeding W. M. IRISH, Philadelphia, resigned.

R. W. STEWART, field engineer for the Stanolind Oil & Gas Company in Houston, Tex., and CHARLES BRADFORD, in the production department of the same company, are spending a vacation of two weeks in Mexico City.

DR. GLENN O. EBREY, chief chemist for the Pennzoil Company, and ROBERT G. BOSSLER, production engineer for the Brundred Oil Corporation, are instructors in the Pennsylvania State College refining and production extension courses in Oil City.

GUY CORFIELD, engineer for the Southern California Gas Company in Taft, Calif., delivered an address on "Treatment of Gases to Remove Carbon-dioxide and Sulfur Compounds" at the monthly dinner of the Taft chapter, California Natural Gas Association, held October 21.

Goes High in Union Oil

H. C. Dalton, formerly assistant superintendent of construction for the Union Oil Company of California, has been made superintendent, and in his new position he has charge of all construction work performed for the field, gas and pipe-line departments in the state and of all personnel engaged in this work. His headquarters will be in Santa Fe Springs. He succeeds the late C. W. Eckles.

H. C. DALTON

Mr. Dalton's experience in the oil industry dates back to 1907, when, upon leaving school, he went to work with a construction gang on a pipe line and pump station job. His first employment with the Union Oil Company was in 1909, on construction of a pipe line. On completion of the line he worked as a fireman and engineer. Two years later he went to Texas, his native state, but in 1916 he rejoined Union as a gauger at Coalinga. Then came more important jobs. He was first engineer at the San Luis tank farm and then worked on boiler efficiency and small pipe line construction there. In 1923 he was transferred to similar work in the Los Angeles area. Two years later he was advanced to the engineering department as assistant to Mr. Eckles in field construction. When the field construction department was established as a separate unit in 1929 he remained as assistant superintendent until the recent death of Mr. Eckles. During his 12 years in the department Mr. Dalton has supervised important construction projects for the company throughout California.

WILLIAM MASSEY, who has been superintendent of production for the American Liberty Oil Company in Southwest Texas, has been transferred to Kilgore, Tex.

CHARLES J. HOLLAND, general manager of the Rado Refinery Company, McAllen, Tex., has been elected a new director of the McAllen Chamber of Commerce.

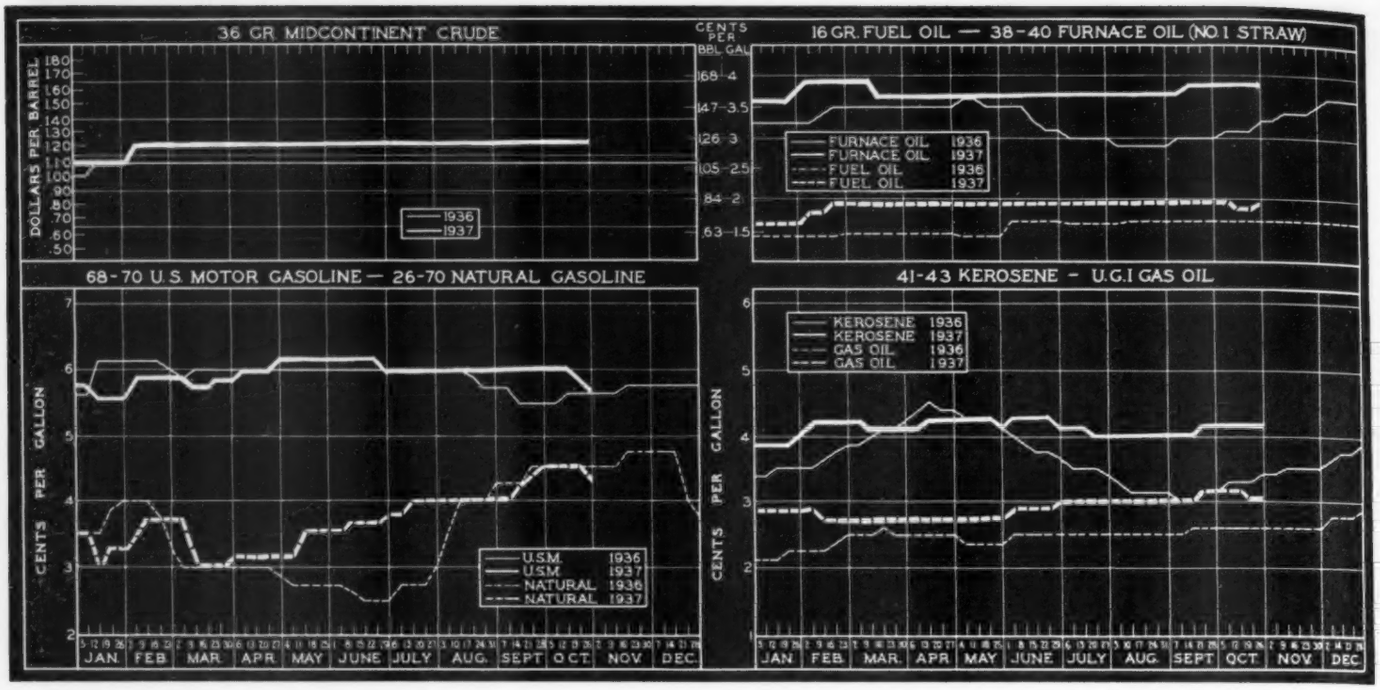
W. H. YOUNG, JR., manager of the Oil Core Testing Laboratory, Inc., Titusville, Pa., has resigned to become geologist and petroleum engineer for the Bradley Producing Company, Wellsville, N. Y.

R. B. DUGGER, field engineer for the Shell Oil Company in California, has been transferred to Bakersfield, where he was located before his recent six-month stay at the company's camp at Oilfields, near Coalinga.

"FERG" DAVIS has been named head of the land department of the Atlantic Refining Company in the Corpus Christi, Tex., division. He was formerly scout in the same office. He is being replaced by ROB SIDDALL, transferred from Dallas.

A. H. GANDY, formerly assistant superintendent of the Pacific Western Oil Company in the San Joaquin Valley, has been transferred to Santa Maria, California, where he will engage in geologic and petroleum engineering work in the Coastal area.

E. G. DAHLGREN, director of the conservation division of the Kansas Corporation Commission, has announced that a hearing will be held on the gas-oil ratio for the Burrton field, Reno and Harvey counties, on November 18, at the Hotel Broadview, Wichita, Kans.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Gasoline Continues Downward Glide in Group 3; Heating Oils Strong

By T. F. SMILEY

Gasoline continued its downward glide in the Group 3 tankcar market in the past week, with the reasons none too clear. The naturals were off, too. The lubricants were soft. Heavy fuels remained sluggish. In contrast with the general flatness was the buoyancy of kerosene and the furnace oils.

Expressions in the trade indicated it was nervousness, rather than seasonal contraction in demand, that rubbed another quarter-cent off the tankcar prices of motor fuel. Some of the smaller refiners, skeptical regarding the outlook, exhibited growing reluctance to use their storage tanks. A relatively insignificant quantity of gasoline was involved; but, seeking immediate outlet, it seems to have set up competition for orders in the spot market, with consequent toppling of quotations.

Reasons for Uneasiness Obscure

Nobody appeared able to put a finger on the cause for distrust that impelled hurried selling of gasoline, though there was some plain and fancy guessing about it. The collapse of the stock market, with its implications in the field of business generally, was suggested as a possible factor. Reduction in automobile factory schedules may have helped, according to others. Lingering fear of a cut in the price of crude, with correspondingly lower prices for products, was mentioned, although informed observers adopt the view that no reduction in crude prices is likely so long as state proration authorities keep their production allowables within the recommendations of the Bureau of Mines. Even the Madison trial was referred to in discussions of the low prices of gasoline, although nobody pretended to see any connection between the two. The trial has created disquiet, however, and that is not conducive to a healthy market.

Declining demand and some recession in quotations are looked for annually in the gasoline market with the close of the vacation season; but in view of the fact that prices were too low all summer, it is contended there should not have been so sharp a drop as this fall has witnessed. Jobbers are disinclined to buy till they can see the tank bottoms, fearing further lowering of prices. Many in the trade evince misgivings over the fact that refiners are entering their season of gasoline accumulation with the nation's stocks already exceeding those of a year ago by some 8,000,000 bbls.

With increasing frequency declarations were heard in the past week that plants would have to be closed unless better prices prevailed. One refiner said careful calculation showed he was losing slightly under 7 cents on every barrel of crude processed in his East Texas plant. He would shut down, he said, if it were not for the necessity of taking care of his established trade. It was pointed out that in October, 1936, although crude and operating costs were lower than now, the trend of gasoline prices was upward.

Naturals Take a Fall

Offerings from Texas manufacturers with limited storage facilities sent natural gasoline prices down a quarter-cent, with Oklahoma manufacturers compelled to follow suit. It was believed probable that unwieldly stocks had been pretty well cleaned up through orders attracted by bargain quotations and that the market was fairly stabilized. There has not been yet the stinging cold weather that starts rush orders for natural. Weakness of the refinery gasoline market too has a depressing influence on the naturals.

The strength of the heating oils was more pronounced than last week, with some grades hard to get at any price. Jobbers in northern territory reported particular scarcity of the No. 2 grade. Both the straw and the dark material were in lively demand. Kerosene and range oil were finding ready outlets at firm prices. Slackening demand on the part of industries and railroads resulted in continued softness of heavy fuels. Wax was unchanged.

Refined Oil Market Barometer

Gasoline generally weaker and concern expressed over the fact that refineries are entering the period of gasoline accumulation with stocks already 8,000,000 bbls. larger than they were a year ago. Kerosene and heating oils firm, with some grades scarce. Military operations in Spain and the Far East are calling for a wide range of oil products. Heavy residual fuels soft.

MID-CONTINENT. Gasoline weak and market nervous. Naturals down. Heating oils vigorous.

EAST COAST. Gasoline easier. Furnace oils firmer. Export business expanding.

GULF COAST. Gasoline weak. Kerosene and burning oils strong.

CALIFORNIA. Fuel oil, diesel and burning oils firm. Gasoline steady.

PENNSYLVANIA. Gasoline easier. Kerosene and fuel oil strong. Lubricants weak.

CHICAGO. Gasoline unsteady, with much retail price-cutting. Kerosene and distillates firm.

Gasoline Softer on the Eastern Coast But Fuels Reported More Active

By H. STANLEY NORMAN

NEW YORK, Oct. 26. — The refinery gasoline market continued last week to bend slightly to the soft side with tank-wagon reductions of a half cent per gallon by Standard Oil Co. of New York in Syracuse and Buffalo. Partly offsetting the softer tone in gasoline, heavy and intermediate fuel oils were reported more active and much of the price shading of the preceding week in New York harbor territory disappeared.

In addition to the half-cent tank-wagon reductions in up-state New York last week by the Socony-Vacuum subsidiary, the northeastern gasoline market has also absorbed Standard Oil Co. of New Jersey's quarter-cent cut on nonpremium tankcar motor fuel in New Jersey. The fact that motor fuel market conditions are reasonably stable in New York, however, is regarded as a healthy sign for this season of the year. Unleaded motor fuel is available to the New York trade at 7½ cents per gallon in tankcar and 7¼ cents in barges, but a good part of the business is transacted at fractionally higher figures on long-term contracts which involve some considerations which open market traders are unable to offer customers.

Motor fuel remains highly unsettled in northern New Jersey where a spread of 3 cents per gallon exists between the stations marketing unbranded gasoline and those dispensing major company products. New Jersey dealers are making deep inroads into the business of competitive stations across the Hudson River in New York. The week-end football motorists are making most of their trips on gasoline purchased in New Jersey and filling tanks before returning to New York with sufficient motor fuel to run nearly an additional week.

That the week-end motoring in the Northeast remains heavy is indicated by reports from the Holland Tunnel and Washington Bridge. During the week-end of October 16, travel through the Holland Tunnel set an all-time record.

So far winter temperatures have been mild, but the curve of mean figures is dropping and furnaces are operating on longer and more consistent schedules almost every week. Following a custom which is almost a ritual, apartment house owners in this section started their furnaces October 15. In many instances heat is not available prior to October 15 unless unusual cold weather exists. This turn has added materially to calls for furnace oils and with temperatures consistently lower domestic users are gradually increasing their consumption of light burning material.

Bunker C fuel oil staged a rally last week. Reports of available Bunker C fuel oil at $1.25 per barrel were practically extinct last week and most traders said they were compelled to pay $1.35 per barrel for current supplies. Shipping operations are holding up well considering seasonal conditions and schedules of most big lines call for continued operations throughout the winter. Big lines are making a strong play for winter travel business by arranging attractive trip points of mild year-round climate.

Probably the most important factor in the refined oil market at this time, however, is the heavy demand from Spain and the Far East. Some of the Far Eastern business is now being served from the Atlantic Coast as far north as Bayonne, indicating that the demand is huge. Informants report that the Far Eastern business, trade with China and Japan, covers practically the entire list of refined products. Japan, being the aggressor, is consuming the largest percentage of shipments from this country. Shipments to both belligerents, however, consist of fuel oil, fighting grade gasoline, aviation motor oil, and diesel fuel in addition to kerosene.

Export demand is also contributing materially to the continued firmness of the Gulf Coast market which in turn is reflected in marketing conditions in the North Atlantic district. Probably no more complete evidence of the importance of exports in the current picture is available than from the current Bureau of Mines demand estimate. For November, the Bureau of Mines estimated export gasoline demand at 3,500,000 bbls., an increase of 250,000 bbls. Estimated exports of fuel oil dropped almost as much as gasoline demand is expected to increase. However, fuel oil requirements for plant operation and losses in this country increased in the bureau's calculations by 600,000 bbls., nullifying the drop expected in exports.

Kerosene business volume and price conditions are unchanged, although the demand is expanding in line with seasonal operations. Kerosene in barges for New York delivery is available at 6⅛ cents per gallon or slightly less while the tankcar quotation of 6.3 cents seems fairly uniform in the territory. Large volumes of kerosene have been moved through the New York barge canal during recent weeks, some coming to the East Coast and part moving in the other direction.

There has been some improvement in the tank-wagon fuel oil structure with most jobbers advancing their quotations to "peddlers" to 5⅝ cents per gallon. The tankcar price is unchanged for No. 2 fuel oil at 5¼ cents per gallon at refineries.

The Pennsylvania lubricating oil market remains at low levels, although late last week there was some evidence of improvement in demand which may stabilize bright stocks in the near future. Excessive production of Pennsylvania crude oil and diversion of business to other refining centers are factors responsible for the recent cuts both in the field and in the refinery market. Pennsylvania gasoline, fuel oil and kerosene market conditions are satisfactory and in line with East Coast prices. There was a little business done last week in the southern district of eastern Pennsylvania at an eighth of a cent under the market for gasoline, but Bradford prices underwent no change.

The tanker charter market showed little change last week. A vessel was chartered on the Pacific Coast for service to Japan for 29 shillings, the same figure at which other recent fixtures have been arranged. One boat was available on the Gulf Coast for north of Cape Hatteras service for 27 cents per barrel, for a cargo of light oil. The range of charter rates is topped in the current market by about 30 cents per barrel for heavy fuel oil movement. With several new boats launched during the past three or four months and probably 10 more due to come off the ways before Christmas, it is possible that the tanker market will not move up to the levels attained last winter and early spring. On the other hand, at least part of the additional tonnage available from an expanded tanker fleet, will be required to handle the anticipated increase in fuel oil con-

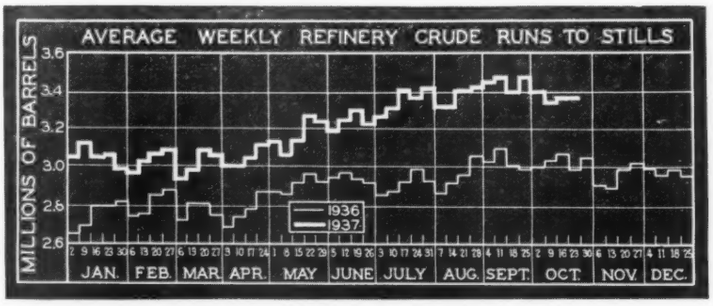
(Continued on Page 168)

A. P. I. Weekly Refinery Statistics

Week Ending October 23, 1937

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	576,000	18,127,000	15,640,000
Appalachian	88.4	102,000	2,647,000	917,000
Indiana, Illinois, Kentucky	92.4	454,000	9,939,000	7,349,000
Oklahoma, Kansas, Missouri	84.7	285,000	6,029,000	3,927,000
Inland Texas	56.6	139,000	1,916,000	1,810,000
Texas Gulf	95.7	710,000	8,222,000	11,342,000
Louisiana Gulf	96.6	126,000	2,079,000	3,527,000
North Louisiana and Arkansas	63.7	52,000	386,000	455,000
Rocky Mountains	69.7	47,000	1,264,000	666,000
California	90.9	582,000	12,345,000	70,651,000
Total reported	89.0	3,073,000	62,954,000	116,284,000
Estimated unreported	.....	307,000	3,600,000	3,350,000
*Estimated total	.....	3,380,000	66,554,000	119,634,000
*Estimated total, previous week	.....	3,380,000	65,760,000	119,155,000
*October 24, 1936	.....	2,990,000	57,864,000	114,206,000

*Bureau of Mines, currently estimated.



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending October 9, 1937	309,009,000 barrels
Week ending October 2, 1937	309,036,000 barrels
Week ending October 10, 1936	291,215,000 barrels

RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of October 26, 1937

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag.	Dlr.	Inc. tax	tank-wag.
Chicago, Ill.	15 5	13 5	4 0	10 1
Decatur	15 5	14 0	4 0	10 1
Joliet	15 5	14 0	4 0	10 1
Peoria	15 5	14 0	4 0	10 1
Quincy	15 3	13 8	4 0	9 9
Davenport, Ia.	15 5	14 0	4 0	‡13 1
Des Moines	15 3	13 8	4 0	‡12 9
Mason City	15 7	14 2	4 0	‡13 3
Sioux City	15 5	14 0	4 0	‡13 1
Duluth, Minn.	17 3	15 8	5 0	10 9
Mankato	16 9	15 4	5 0	10 5
Twin Cities	16 9	15 4	5 0	10 5
Lacrosse, Wis.	16 9	15 4	5 0	10 5
Green Bay	17 2	15 7	5 0	10 8
Milwaukee	16 8	15 3	5 0	10 4
Detroit, Mich.	15 4	13 9	4 0	9 8
Grand Rapids	16 5	15 0	4 0	10 9
Saginaw	16 3	14 8	4 0	8 5
Evansville, Ind.	17 0	15 5	5 0	†10 6
Indianapolis	17 2	15 7	5 0	†10 8
South Bend	17 4	15 9	5 0	†9 6
Fargo, N. Dak.	16 9	15 4	4 0	11 5
Minot	18 1	16 6	4 0	12 7
Huron, S. Dak.	17 3	15 8	5 0	10 9
Kans. City, Mo.*	14 9	13 4	4 0	8 0
St. Louis*	15 2	13 7	4 0	9 8
St. Joseph*	14 9	12 4	4 0	9 0
Wichita, Kans.	14 4	12 9	4 0	8 0

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Iowa kerosene prices include 3-cent state tax.

(Exclusive of state general sales taxes, except Indiana and South Dakota.)

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Atl'tic City, N. J.	13 5	12 0	4 0	9 0
Newark	13 5	12 0	4 0	9 0
Annapolis, Md.	15 6	14 1	5 0	9 5
Baltimore	15 0	13 5	5 0	9 0
Cumberland	17 4	14 9	5.0	10.0
Wash'g'n, D. C.*	12 5	11 0	3 0	9 5
Danville, Va.	18 2	15 7	6 0	12 9
Norfolk	17 0	14 5	6 0	11 5
Petersburg	17 3	14 8	6 0	11 7
Richmond	17 3	14 8	6 0	11 7
Roanoke	18 5	16 0	6 0	12 9
Charles'n, W. V.	17 8	15 3	6 0	12 6
Parkersburg	17 1	14 6	6 0	11 2
Wheeling	17 0	15 5	6 0	12 2
Charlotte, N. C.	19 4	16 9	7 0	12 6
Hickory	19 9	17 4	7 0	13 0
Mt. Airy	19 7	17 2	7 0	12 8
Raleigh	19 0	16 5	7 0	12 1
Salisbury	19 5	17 0	7 0	12 7
Charleston, S. C.	18 0	15 5	7 0	11 1
Columbia	19 0	16 5	7 0	12 1
Spartanburg	19 7	17 2	7 0	12 9

*Standard of N. J. has discontinued posting service-station prices at all above points except at Washington and Baltimore where station prices of 16.0 and 18.5 cents, respectively, are in effect.

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5-cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline			Kero.
	Tank wag.	Net dlr.	Inc. tax	tank-wag.
Atlanta, Ga.	21 0	18 0	7 0	*†12 0
Augusta	21 0	18 0	7 0	*14 0
Macon	21 5	18 5	7 0	*14 5
Savannah	19 0	16 0	7 0	*12 0
Birm'ham, Ala.	20 0	17 0	8 0	12 0
Mobile	22 0	19 0	9 0	11 0
Montgomery	22 0	19 0	9 0	14 5
Jackson, Miss.	21 0	18 0	7 0	*13 0
Vicksburg	20 5	17 5	7 0	*13 0
Jacksonville, Fla.	20 5	17 5	8 0	†10 0
Miami	20 5	17 5	8.0	†12 0
Pensacola	22 0	19 0	9 0	12 0
Tampa	19 0	16 0	8 0	10 5
Lexington, Ky.	20 0	17 0	6 0	11 0
Covington	19 5	16 5	6 0	11 0
Louisville	20 0	17 0	6 0	10 5
Paducah	20 0	17 0	6 0	10 0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Denver, Colo.	17 5	5 0	11.5
Grand Junction	20 0	5 0	15 0
Pueblo	16 0	5 0	10 5
Casper, Wyo.	18 0	5 0	11 5
Cheyenne	18 0	5 0	13 0
Butte, Mont.	19 5	6 0	15 5
Billings	21 0	6 0	15 5
Helena	21 5	6 0	15 5
Great Falls	21 5	6 0	15.5
Salt Lake, Utah	19 5	5 0	16 0
Twin Falls, Ida.	21 5	6 0	18 0
Boise	21 5	6 0	18 0
Albuquerque, N. M.	17 5	6 5	12 0

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Tank wag. con'r.	Di-vided dlr.	Inc. tax	tank-wag.
Ohio points	17 0	16 0	5 0	*13 5

*Includes state tax of 1 cent.

Discounts to commercial consumers, contract: Effective Aug. 12, 1937, for Ohio state-wide, 20,000 gallons or over per month, 1 cent per gallon off commercial consumer tank-wagon price. Tank-wagon price is price to commercial consumers in deliveries of 25 gallons or more; less than 25 gallons gets service-station price. Price to undivided dealers is same as to commercial consumers.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wag.	Dlr.	Inc. tax	tank-wag.
Omaha	17 9	16 4	6 0	10 4
McCook	18 0	14 0	6 0	10 0
Norfolk	18 3	16 8	6 0	10 8
North Platte	18 7	17 2	6 0	11 2
Scotts Bluff	19 4	15 9	6 0	11 9

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
San Francisco	17 5	18 5	4 0	11 5
Los Angeles	17 0	18 0	4 0	9 0
Fresno, Calif.	18 5	19 5	4 0	12 0
Phoenix, Ariz.	21 0	22 0	6 0	‡16 0
Reno, Nev.	20 0	21 0	5 0	13 0
Portland, Ore.	20 0	21 0	6 0	13 5
Seattle, Wash.	20 0	21 0	6 0	13 5
Spokane	23 0	24 0	6 0	16 5
Tacoma	20 0	21 0	6 0	13 5

‡Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Albany, N. Y.	15 0	13 5	5 0	9 0
*Met. N. Y.:				
Manh't'n, Br'nx	14 5	13 5	5 0	9 0
Staten Island	15 0	13 5	5 0	9 0
Q'ns & Brklyn	14 5	13 5	5.0	9.0
Buffalo	15 05	14 04	5 0	8 5
Rochester	15 5	14 17	5 0	8 5
Syracuse	15 5	14 12	5 0	9 5
Boston, Mass.	12 5	13 0	4.0	8.5
Portland, Me.	15 8	13 5	5 0	8 75
Manch'ter, N. H.	16 3	14 0	5 0	9 5
Burlington, Vt.	15 9	13 9	5 0	9 5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon price at delivery point.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Muskogee, Okla	15 0	5 0	7 0
Oklahoma City	14 0	5 0	8 0
Tulsa	14 0	5 0	7 0
Ft. Smith, Ark.	15 5	5 0	8 0
Little Rock	18 0	7 5	9 5
Texarkana	15 5	5 0	8 5

Texas

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
Dallas, Tex.	14 0	18.5	5.0	8 0
Fort Worth	13 5	18 0	5 0	5 0
Houston	14 5	18 5	5 0	8 0
San Antonio	14 5	18 5	5 0	8 0

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
N. Orleans, La.	20 5	18 0	*10 0	†13 0
Baton Rouge	18 5	16 0	8 0	12 0
Alexandria	19 0	16 5	8 0	12 0
Lafayette	19 5	17 0	8 0	13 0
Lake Charles	19 5	17 0	8 0	12 5
Shreveport	18 0	15 5	8 0	9 5
Knoxville, Tenn.	21 5	19 0	8 0	14 0
Memphis	19 5	17 0	8 0	12 0
Chattanooga	21 0	18 5	8 0	13 5
Nashville	20 5	18 0	8 0	11 5
Bristol	20 25	19 0	8 0	14 5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Standard of La. has transferred all stations to dealers except in New Orleans and Baton Rouge where station prices are 24 and 22 cents per gallon, respectively.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Philadelphia, Pa.	14 0	12.5	5 0	10 5
Pittsburgh	15 5	13 5	5 0	11 0
Allentown	15 0	13 5	5 0	11 0
Erie	14 5	13 0	5 0	10 0
Scranton	15 0	13.5	5 0	11 0
Altoona	15 5	13 5	5.0	11 0
Dover, Del.	14 5	....	5 0	11 0
Wilmington	14 5	....	5 0	11 0
Spring'd, Mass.	13 3	....	4 0	9 0
Worcester	14 3	....	4 0	9 0
Hartford, Conn.	14 1	....	4 0	9 0
New Haven	14 0	....	4 0	9 0
Providence, R. I.	14 0	....	4 0	8 5

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Canada*

3 Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N.S.	24 0	8 0	18 5
St. John, N.B.	24 0	8 0	18 5
Montreal, Que.	21 0	6 0	17 5
Toronto, Ont.	22 0	6 0	17 0
Hamilton, Ont.	22 0	6 0	17 0
Winnipeg, Man.	27 5	7 0	20 7
Brandon, Man.	29 8	7 0	22 3
Regina, Sask.	29 5	7 0	22 0
Saskatoon, Sask.	32 3	7 0	24 8
Edmonton, Alta.	29 5	7 0	24 2
Calgary, Alta.	27 0	7 0	21 5
Vancouver, B.C.	23 0	7 0	23 0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Atlantic Refining Co. October 18 reduced dealer gasoline .5 cent in Worcester.

Socony-Vacuum Oil Co., Inc. October 15 reduced dealer gasoline .75 cent in Buffalo; October 9 reduced dealer gasoline .5 cent in Boston.

New York Market

(Continued from Page 167)

sumption in the Northeast. Markets for export and coastwise movement were inactive on the Gulf Coast last week. Several European buyers were shopping around in the market for bargains in gas oil and 65-octane gasoline, but had not definitely closed with any of those quoting against the inquiries. One cargo of No. 2 fuel oil sold earlier in the month at 4½ cents per gallon, on the strong side of the range for this material prevailing for several weeks.

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of October 26, 1937

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below (3d gr.)	.04½	.04¾
63-66 octane	.05	.05¼
67-69 octane	.05¼	.05⅜
70-72 octane (regular)	.05⅜	.05¾
60-62 400 grades:		
62 oct. and below (3d gr.)	.04½	.04¾
63-66 octane	.05	.05¼
67-69 octane	.05¼	.05½
70-72 octane (regular)	.05⅜	.05⅞
64-66 375	.05	.05¼
68-70 360	.05⅛	.05⅜

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04½	.04⅞
63-66 octane	.05	.05¼
67-69 octane	.05¼	.05½
70-72 octane (regular)	.05⅜	.05⅞
60-62 400	.04½	.04⅞
64-66 375	.05	.05¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below	.05¼	.05⅜
63-66 octane	.05⅜	.05½
67-69 octane	.05⅝	.05¾
70-72 octane (regular)	.05⅞	.06

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.05¼	.05⅜
63-66 octane	.05⅜	.05½
67-69 octane	.05½	.05¾
70-72 octane (regular)	.05⅞	.06

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04½	.04¾
63-66 octane	.05	.05¼
67-69 octane	.05¼	.05½
70-72 octane (regular)	.05⅝	.05⅞
60-62 400 grades:		
62 octane and below	.04½	.04¾
63-66 octane	.05	.05¼
67-69 octane	.05¼	.05½
70-72 octane (regular)	.05⅝	.05⅞
64-66 375	.05	.05¼
68-70 350	.05½	.05⅝

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.05½	.06
60-64.9 octane	.07⅜	.07¾
65-70 octane	.07½	.08
64-66 375	.05¾	.06½
68-70 350	.06	.06¼

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07½	.08½
58-60 400, 65 oct. and higher	.08¼	.09¼

EAST COAST (Domestic)—

U. S. Motor below 60 octane:		
*New York (Bayonne)	.06¼	.06½
Baltimore	.06	.06¼
U. S. Motor, 60-64.9 octane:		
*New York (Bayonne)	.07¼	.07¾
Philadelphia	.07¼	.07½
Boston	.07¾	.08¼
Baltimore	.07¼	.07½
Charleston, S. C.	.07¼	.07¾
U. S. Motor, 65 and above:		
*New York (Bayonne)	.07½	.08
Philadelphia	.07¼	.07¾
Boston	.07¾	.08¼
Baltimore	.07½	.08
Charleston, S. C.	.07¾	.08¼

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:	
Below 60 octane	.05⅞
60-64.9	.06
65 octane and higher	.06¼

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.05½	.05⅝
52-54 450 (blending)	.05½	.05⅝
54-56 450 (blending)	.05⅝	.05¾

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.04¼
Grade 18-55	.05⅛	.05¼

NORTH TEXAS—

Grade 26-70		.04½
Grade 18-55	.05	.05⅛

CALIFORNIA—

75-85 375-390	.06¾	.07½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04⅝	.04¾

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04⅛	.04¼
41-43 gr., 300-350 i.b.p., 110-125 flash, 500-520 e.p.	.04¼	.04½
46-48 gr., 210-230 i.b.p., 480 max. e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04⅛	.04¼
42-44	.04¼	.04½

NORTH TEXAS—

41-43	.04⅛	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43		.04½

ARKANSAS (Ark., N. La., Miss. del.)—

41-43		.04¾

PENNSYLVANIA (inland refineries)—

45	.05⅜	.05½
46	.05½	.05⅝
47	.05⅝	.05¾

CHICAGO (Based on Group 3)—

41-43	.04	.04¼
42-44	.04¼	.04½

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04¾	.06

NEW YORK (Bayonne, N. J.)—

41-43		.06 3/10

***GULF COAST (domestic)—**

41-43		.05¼

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.04	.04⅛
No. 1 straw, 38-40	.03¾	.04
No. 2 straw, 32-36	.03¾	.03⅞
No. 2 dark, 32-36	.03½	.03⅝
No. 3 zero to 15, 28-32	.03⅜	.03½
No. 3, 15 and above, 28-32	.02⅞	.03

NORTH TEXAS—

No. 1 prime white, 38-42	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03¾

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.04	.04⅛
No. 1 straw, 38-40	.03¾	.03⅞
No. 2 straw, 32-36	.03⅝	.03¾
No. 2 dark, 32-36	.03⅝	.03½
No. 3, zero to 15, 28-32	.03⅜	.03½
No. 3, 15 and above, 28-32	.02⅞	.03

NEW YORK (Bayonne, N. J.)—

*No. 1		.06 3/10
*No. 2		.05½
*No. 4		.05¼

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
Below 18 fuel oil, industrial	.77½	.82½

NORTH TEXAS—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 5, low cold test, 18-22	.82½	.87½
Below 18 fuel oil, industrial	.77½	.82½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.07½	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
No. 6, low cold test, 10-16	.80	.85

PENNSYLVANIA (inland refineries)—

36-40	.04⅝	.05

CALIFORNIA—

Los Angeles:		
30-34 gas oil, per bbl.	1.40	1.50
24 plus diesel, per bbl.	1.35	1.45
24 plus diesel (bunkers)	1.60	1.65
12-16 (bunkers at tidewater)	1.05	1.10
10-16 (cargo lots)	.90	1.10
12-17 (tankcars)	.95	1.15
10-17 (high sulfur)	.65	.95
San Joaquin Valley:		
10-18 (tankcars)	.75	1.00
24 plus diesel, per bbl.	1.40	1.50
24 plus diesel (bunkers)	1.60	1.65
10-16 (bunkers)	1.10	1.15

GULF COAST—

28-30 gas oil	.04½	.04⅝
28-30 diesel (bunkers)		1.90
Bunkers (bulk cargoes)		.85
Bunker C (bunkers)		1.05

NEW YORK (Bayonne N. J.)—

27 plus. gas oil	.04¾	.04⅞
28-30 diesel (lighterage 6¼c per bbl.)		2.20
28-30 diesel (tankcars)		.05
Bunker C (to ocean-going ships in N. Y. harbor)		1.35
Industrial fuel (tankcars)	.04½	.04¾

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:		
190-200 D, 15-25		.20
150-160 D, 0-10		.17
150-160 D, 15-25		.16
150-160 E, 15-25		.15½
100-110 D, 0-10		.15½
Steam refined:		
631 green (treated)		.15½
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour test	.19	.19½
15 pour test	.18	.18½
20 pour test	.17	.17½
25 pour test	.16	.16½
Steam refined:		
600	.09	.10
650	.13½	.14½
600 Pennsylvania flash	.14	.15
630 flash	.18	.19
600 Warren E filtered	.15½	.16½

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.22½	.23
10 pour test	.21½	.22
15 pour test	.21	.21½
25 pour test	.20	.20½
180 vis. at 70° F., 3 color:		
25 pour test	.23	.23½
200 vis. at 70° F., 3 color:		
Zero pour test	.27	.27½
10 pour test	.26	.26½
15 pour test	.25½	.26
25 pour test	.24½	.25

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale		.03

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0295	.0300
124-126 (a.m.p.) w.c. scale	.0295	.0300

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0295	.0300
124-126 (a.m.p.) y.s.	.0265	.0280
Petrolatum in barrels, carload lots:		
Dark green		.01⅞
Amber	.02⅞	.03
Extra amber	.03	.03⅛
Lily white	.06⅝	.06¾
Snow white	.07¾	.07⅞
Cream	.05⅝	.05¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.05⅞
60-62 400		.06¼
61-63 390	.06⅛	.06¾
64-66 375		.06⅞

LOS ANGELES—

U. S. Motor grades:		
55-65 octane		.06
65-69 octane		.06¼
Above 69 octane		.06½

KEROSENE

GULF COAST—

41-43 prime white		.04⅞
41-43 water white		.05⅛
44 water white		.05⅝

LOS ANGELES—

41-43 water white	.04½	.05

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.22½	.24½
600 S.R. unfiltered	.20½	.21
630 S.R. unfiltered	.23½	.24
600 flash, S.R.	.24	.24½
630 flash, S.R.	.28½	.29
Bright Stocks:		
8 color	.32	.32½
6½ plus color in dilution	.31½	.32

NEUTRAL OIL

200-3 color	.31	.31½
150-3 color	.27	.27½

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude scale:		
124-126 w.s.	.0295	.0300
124-126 y.s.	.0265	.0280

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

West Texas

See gravity table.

Pecos County*	.91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co., and Humble Oil & Refining Co. †Shell Petroleum Corp.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (Nov. 4, 1936)*†	.62
Hamilton Dome, Wyo. (Nov. 4, 1936)*	.57
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light	.82
Hogback, N. Mex.*	1.33
Pondera, Mont. (Jan. 26, 1936)*	1.05
Salt Creek Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†	1.23
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table)	
Artesia, N. Mex.	.90
Maljamar, N. Mex.	.90
Canon City and Florence, Colo.	1.10
Florence, Colo.	.98
Lance Creek, Wyo.	.97
Sunburst, Mont. (June 5, 1936)	1.20
Cat Creek, Mont.	1.40
Cut Bank, Mont.	1.35

*Standard Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.25
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (July 23, 1937)*	1.27
West Branch, Mich. (July 22, 1937)	1.09
Buckeye (July 23, 1937)	1.24½
Arenac, Mich (July 1, 1937)	1.21
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.

Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

Gulf Coast

(January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La.	.98
Tepetate (La.) (Jan. 4, 1937)	1.12

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2-cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Southwest Texas

(January 28, 1937)

Pettus	1.37
Salt Flat, Darst Creek, Hilbig, Carroll Clark, Zoboroski	1.09
Luling	1.00
Lytton Springs	1.12

Saxet and Taft take same gravity table as Gulf Coast.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90

Eastern States

(Prices are 25 cents per bbl. below those posted on September 1)

TIDEWATER PIPE LINE CO.
(Effective October 12, 1937)

Bradford, Pa.	$2.35
Allegany, N. Y.	2.35

SOUTH PENN OIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.35
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.05
Pennsylvania Grade Oil in Eureka Pipe Line lines	2.00
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.85
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective October 12, 1937)

Pennsylvania Grade Oil in National Transit Lines:	
Group A — Includes Cochran, Franklin, Hamilton and Doolittle districts.	2.35
Group B — Includes Tidioute district.	2.34
Group C — Includes Turkey and Tidioute districts.	2.30
Group D — Includes Bear Creek and Porkey districts.	2.29
Group E — Includes Eideneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	2.26

PURE OIL CO.
(Effective October 12, 1937)

Cabin Creek, W. Va.	2.00
Bradford Hollow, W. Va.	2.00
Kelly Creek, W. Va.	2.00

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2.17
Turner Valley, Alberta province (Dec. 16, 1936):†	
Clear naphtha	$2.60
Discolored naphtha, 65 gravity and higher	2.36
Discolored naphtha and crude oil, 40-40.9 gravity	1.55
Increasing 3 cents for each degree of gravity with top price for 64-64.9 gravity	2.27

These prices delivered field tankage.
*Imperial Oil, Ltd.
†Imperial Oil, Ltd., and Regal Oil & Refining Co. On crude oil alone British American Oil Co. posted above prices on December 9, 1936.

Mexico

Panuco*	$1.24

*In U. S. currency, f.o.b. ship, based on September spot market transactions.

Rocky Mountain Runs

Production estimates for week ended October 23:

	Bbls.
WYOMING	
Salt Creek	16,470
Big Muddy	1,400
Dallas Derby	590
Frannie	2,540
Garland	2,310
Grass Creek	3,220
Hamilton dome	3,020
LaBarge	1,130
Lance Creek	11,100
Lost Soldier	1,360
Medicine Bow	4,900
Oregon Basin	7,330
Osage	820
Quealy dome	700
Rock River	2,900
South Casper	500
Miscellaneous	2,360
Total Wyoming	62,650
MONTANA	
Border	150
Cat Creek	580
Cut Bank	10,330
Dry Creek	150
Kevin-Sunburst	5,160
Pondera	1,260
Total Montana	17,630
COLORADO	
Florence	200
Fort Collins and Wellington	240
Iles dome	2,520
Moffat	400
Tow Creek	200
Price	410
Miscellaneous	130
Total Colorado	4,100
NEW MEXICO	
Cooper	5,450
Eaves	990
Eunice	27,770
Hardy	1,440
Hobbs	16,450
Jal	1,130
Langlie	2,300
Lynch	680
Lynn	360
Mattix	2,030
Monument	29,420
Penrose	3,890
Skelly	1,620
South Eunice	2,160
Artesia-Maljamar	6,810
Rattlesnake	810
Miscellaneous	750
Total New Mexico	104,060
Total Rocky Mountain region	188,440

Steuben's Big Gassers

CORNING, N. Y., Oct. 26.—Three new gas wells reported in the Woodhull Township, Steuben County, field brought in a daily production of 75,200,000 feet of gas. One of the wells is owned by Godfrey L. Cabot, Inc., and the Sylvania Corp. owns the other two.

The Cabot well was the largest, blowing in with 28,000,000 feet on the Ralph Towley farm. Depth was 3,908 feet in the Oriskany, 3 feet below the top of the sand. The first Sylvania well showed 25,000,000 feet of gas. Located on the A. H. Tuttle farm, the well struck gas at 3,883 feet, 1 foot below the top of the Oriskany. The Sylvania's second well came in on the Hattie Hand farm with a volume of 22,200,000 feet, having found the Oriskany at 3,987 feet and gas at 3,988 feet. It was drilled to 4,000 feet.

Crude Prices by Gravities

	Oklahoma-Kansas	Oklahoma-Kansas	North and Central Texas	East Central Texas (Mexia district)	North Louisiana-Arkansas	Gray County, Texas	Hutchinson-Carson counties, Texas	Rodessa, Louisiana-Texas and Panola County, Texas	Conroe, Tomball, Raccoon Bend, Deep, Satsuma	Gulf Coast	Gulf Coast	Lea County, N. Mex. West Texas except Pecos County	Mirando district, Texas	Marion County, Texas	Refugio, Greta, Saxet, Taft, Texas	Anahuac, Flour Bluff, Dickson, Turtle Bay	White Castle, Louisiana	Iowa, Louisiana	Cayuga, Texas
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bel. 18	....	....	....	....	....	....	....	....	....	$ 90	....	....	....	....	....	....	....	$ 90	....
18-18.9	....	....	....	....	....	....	....	....	....	.92	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.94	....	....	....	....	....	....	$ .94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.96	$ .95	....	$ .96	....	$1.01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$ .98	....	....	$ .90	....	....	$ .93	....	....	....	....	....	$ .90	....	....	....	....	$ .88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$ .78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel. 29	$1.06	....	$ .96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$ .96	$ .91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40,over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Dickey, Eason, El Dorado, Empire, Falcon, Globe, Gulf, Johnson, Kanotex, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun, Vickers and Wilcox.

Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.

Column 3—All purchasers.

Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.

Columns 5, 6, 7 and 8—All purchasers.

Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tidewater Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)

Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)

Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.

Column 12—All purchasers.

Column 13—All purchasers (effective July 6, 1937).

Column 14—Magnolia Petroleum Co.

Column 15—Humble Oil & Refining Co. (effective July 6, 1937).

Column 16—Humble Oil & Refining Co. prices start at 30-30.9 gravity at $1.16 adding 2 cents for each degree upward to and including 40 and over at $1.36.

Columns 17 and 18—Shell Petroleum Corp.

Column 19—Tide Water Oil Co.

MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1937 High	1937 Low	Week ending Oct. 23 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
114⅞	60	7,200	70½	60	60	Amerada Corp.	788,675	N.P.	50cQ	10-30-37	$2.00	125½	75	80	48½
37	18	31,800	24⅝	18	20½	Atlantic Refining	2,664,000	$25	25cQ	9-15-37	1.25	35⅛	26⅝	28	20½
43⅜	10⅛	24,100	15¾	10⅛	13½	Barber Co.	387.149	$10	25c.	6-1-37	.50	38½	21	22½	11⅜
35¼	10	77,700	15¾	10	13⅛	Barnsdall Oil Co.	2,247,974	$5	25cQ	11-1-37	.80	28¾	14⅛	14¾	5⅞
20⅞	4⅝	213,200	9	4⅝	7¾	Columbia Gas & Elec.	11,610,036	N.P.	20c	5-15-37	.40	23⅜	14	15¾	3⅜
17⅞	7	194,900	10⅞	7	9¾	Consolidated Oil Corp.	13,919,417	N.P.	20cQ	11-15-37	.80	17¼	11½	12¼	6½
49	24	49,900	32¾	24	29½	Continental Oil of Delaware	4,682,615	$5	50cQ†	9-30-37	1.50	44⅞	28⅛	35	15⅛
17⅝	4¾	74,800	8	4¾	7	Houston Oil (new)	1,098,618	$25		10-17-30	....	13⅞	6⅜	7	1½
35⅜	14	21,500	20⅞	14	18⅝	Mid-Continent Petroleum	1,855,912	$10	50cSA	6-15-37	1.15	30⅞	17¼	20½	9½
34	16⅛	4,700	18¾	16⅛	18½	Mission Corporation	1,399,345	N.P.	1.00	6-15-37	.45	29⅞	16¾	17¾	10⅜
41⅜	18	30,500	24¾	18	20⅝	National Supply of Delaware	382.591	$25		5-15-31	....	75½	19⅞	20⅞	9
22⅞	9	85,700	13½	9	12	Ohio Oil Co.	6,563,377	N.P.	50cSA	6-15-37	.60	18	12⅛	14¼	9¼
29¾	12⅛	8,400	15	12⅛	14½	Pacific Western Oil	1,000,000	N.P.	65c	12-18-36	.65	23½	11¾	14	6¾
4½	1	4,700	1½	1	1⅜	Panhandle P. & R.	198,770	N.P.			..	4¼	1⅜	1⅞	½
64	30⅛	82,400	42½	30⅛	39⅞	Phillips Petroleum	4,449,052	N.P.	75cQ†	12-1-37	2.50	52⅝	38⅛	40	13¾
20⅞	13	22,200	19¼	13	17⅞	Plymouth Oil Co.	1,050,000	$5	35cQ	9-30-37	.90	27¾	11⅞	13	6½
24⅜	8¾	307,700	12⅞	8¾	11	Pure Oil Co.	3,281,120	N.P.		9-1-30	....	24⅞	16	17	5⅞
54⅛	16	20,100	23	16	19½	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	9-15-37	1.00	44	30½	36⅞	20¾
34¾	15½	25,100	20½	15½	18⅝	Shell Union Oil	13,070,625	N.P.	50c	7-15-37	.25	28¼	14¾	16½	5½
105⅜	97	1,400	99	97	97	Shell Union Oil 5½% pfd.	343,500	$100	$1.37½Q	10-1-37	28.87½	127½	102	111	63⅛
9	3⅛	700	3⅛	3⅛	3⅛	Simms Petroleum	461,698	$10	75c liq.	11-3-37	2.25 liq.	6¾	3½	18¾	4¾
60⅝	28¼	11,600	35	28¼	31½	Skelly Oil	1,006,348	$15	50c	9-30-37	....	47⅜	19½	20½	6½
23¼	13	249,300	16½	13	15⅜	Socony-Vacuum	31,151,071	$15	25cSA	9-15-37	.70	17½	12½	15¾	10⅝
50	28	43,000	34⅝	28⅛	31¾	Standard Oil of California	13,014,754	N.P.	45cQ†	9-15-37	1.20	47⅝	35	41⅛	27⅜
50	26½	40,500	36¼	26½	34⅝	Standard Oil (Indiana)	15,196,241	$25	50cQ†	9-15-37	2.40	48½	32¾	33⅜	23
50	30⅝	400	34⅞	34	34	Standard Oil of Kansas	134,841	$10	$1	12-26-36	1.00	31	25	32	20
76	42½	92,900	54⅛	42½	50	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	6-15-37	2.00	70⅜	51⅛	52⅜	35⅜
77½	54	2,800	58	54	55¼	Sun Oil	2,156,825	N.P.	25cQ	9-15-37	$1 & 6% Sk.	91	70	77	60½
65⅛	34¾	121,500	45	34¾	40⅛	Texas Corp.	10,896,858	$25	50cQ	10-1-37	1.50	55¼	28⅞	30¼	16½
9⅝	2	58,400	4¼	2	3½	Texas Gulf Producing Co.	888,132	N.P.	5c	12-15-36	.05	8⅞	4⅜	4¾	2½
16⅝	5⅜	60,700	9	5⅜	7⅝	Texas Pacific Coal & Oil	888,237	$10	10c	9-1-37	.25	15¼	7½	9¼	3¼
21⅝	13⅛	51,800	16⅛	13⅛	14⅝	Tide Water Associated	6,288,512	N.P.	35cQ†	9-1-37	.70	21¾	14¾	15⅞	7⅝
28¼	17½	43,300	22½	17½	20¼	Union Oil of California	4,386,070	$25	55cQ†	11-10-37	1.00	28½	20¾	24	14⅜
31½	22½	2,400	23⅜	22½	23¼	Union Tank Car Co.	1,200,000	N.P.	40cQ	9-1-37	1.20	31⅝	22⅝	26½	20⅞
6¼	1¾	7,600	4	1¾	2⅞	Wilcox Oil & Gas	424,839	$5		5-10-28	...	5¼	2¾	3⅛	1

*Ex-dividend. †Includes extras.

New York Curb Exchange

1937 High	1937 Low	Week ending Oct. 23 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
21⅜	7	10,100	11⅞	7	10½	Bridgeport Machine Co.	260,000	N.P.	25c	9-30-37	$1.00	21	13¼	14⅛	3¾
51½	42	50	42	42	42	Buckeye Pipe Line Co.	200,000	$50	$1Q	9-15-37	3.25	50	39¾	42½	30½
2¾	¾	18,900	1⅛	¾	1⅛	Carib Syndicate	799,020	25c			....	4⅞	1⅞	4¼	1⅝
123	95½	300	100	95½	100	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-30-37	7.00	124¾	105	157	115
5⅜	1½	165,200	2¼	1½	2⅛	Cities Service	37,804,394	N.P.		6-1-32	....	7⅜	3	3¼	¾
5½	1½	16,300	2⅝	1½	2⅜	Cosden Petroleum	399,687	$1			....	4½	1½	1½	¼
38¾	20¼	39,700	27	20¼	25	Creole Petroleum	6,974,356	$5	50cSA†	6-10-37	.50	39	19⅞	23¾	10
18⅝	6½	5,300	9⅞	6½	8½	Darby Petroleum	351,390	$5	25cSA	1-15-38	.50	18⅛	9	8⅞	4
8⅜	2¼	10,800	4	2¼	3½	Derby Oil & Refining	263,162	N.P.			....	6¾	1⅞	2	⅝
47½	24½	200	29	24½	29	Eureka Pipe Line	50,000	$50	$1Q	11-1-37	4.00	47½	38½	38	33¼
63½	33	21,300	44¼	33	39	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-37	1.50, 100% Stk.	59	36	74⅝	50¼
87	55	13,300	65⅞	55	62	Humble Oil & Refining	8,923,935	N.P.	62½cQ	10-1-37	1.50	80	57	64	44
24¼	14½	19,800	19¼	14½	18	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	6-1-37	1.25	24½	19⅜	22½	15⅝
15	5⅞	1,100	8¼	5⅞	7⅝	Indiana Pipe Line	300,000	$10	50cSA	11-15-37	.80	9¾	5½	6⅛	3⅝
39½	23½	20,100	30½	23½	29¼	International Petroleum	14,247,088	N.P.	$1.25†‡	6-1-37	2.50	39⅝	32⅝	39¾	28
15¼	7	24,400	8⅞	7	8	Louisiana Land & Exp.	3,000,000	N.P.	10cQ	9-15-37	.50	15⅜	9⅞	11⅜	4⅜
34	12½	18,900	21⅞	12½	19	Lion Oil Refining	270,000	N.P.	25cQ	10-20-37	.75	17¾	7⅝	8⅛	3½
14¼	5¼	20,400	7⅞	5¼	7¼	Lone Star Gas	5,382,723	N.P.	20c	8-21-37	.60	14¼	9⅞	10⅞	4½
14⅝	6¼	3,300	7¾	6¼	7½	Midwest Oil Co.	998,444	$10	50c	12-15-37	....	..	..	..	..
7⅞	4⅛	8,200	5⅛	4⅛	5	Mountain Producers	1,682,182	$10	30cSA	6-15-37	.60	8⅜	5	5¾	4⅛
19½	12	6,600	13½	12	12⅝	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-37	1.00	23	17⅜	20	11¾
12½	7¼	2,900	8¼	7¼	8	National Transit	509,000	$12.50	45cSA	6-15-37	.75	15¾	9¼	10⅝	6¾
6⅛	4¼	100	4¾	4¾	4¾	New Bradford Oil	1,445,202	$5	18c	9-17-37	.10	4⅝	2⅞	3¼	2
5	1⅛	10,300	1½	1⅛	1½	New Mexico and Arizona	1,000,000	$1	1c	12-1-36	.01	6⅝	1⅝	2½	1
5⅜	4	300	4¼	4	4¼	New York Transit	100,000	$5	25cSA	10-15-37	.35	6¼	4¼	4⅞	3
12¾	5¾	300	6¾	5¾	6¾	Northern Pipe Line	120,000	$10	25cSA	12-1-37	.40	9¾	4⅞	8	5¼
9⅝	2¾	121,300	4⅞	2¾	4½	Pantepec Oil	1,608,700	N.P.			....	10⅛	3¼	4⅜	1¼
13¾	2	8,500	3⅞	2	3½	Root Petroleum Co.	336,045	$1	25c	2-1-37	.50	19¼	4½	5	1½
6½	2¼	1,800	3	2¼	2⅞	Ryan Consolidated	296,931	N.P.			....	4¾	1⅞	2½	⅝
56	35	3,400	40½	35	38¾	South Penn Oil	1,000,000	$25	$1.15Q†	9-30-37	2.60	44	32½	34½	21⅝
7¼	3⅞	100	3⅞	3⅞	3⅞	Southern Pipe Line	100,000	$10	25cSA	9-1-37	.25	7⅞	3¼	5	3⅞
42	20⅝	250	22	20⅝	21	South West Penna. Pipe Lines	35,000	$50	50cQ	10-1-37	13.00	60	44	56	44¼
21⅛	14¾	7,200	18	14¾	18	Standard Oil of Kentucky	2,604,790	$10	40cQ†	9-15-37	1.35	23⅜	17⅛	24	18
13⅜	8	3,000	8½	8	8½	Standard Oil of Nebraska	188,403	$25	25c	3-29-37	.25	14⅝	11	12	7¾
45	16	4,100	25¾	16	23⅝	Standard Oil of Ohio	753,740	$25	25cQ	9-15-37	2.00	40	21¾	23⅝	11½
4⅞	2	33,800	3⅛	2	3	Sunray Oil	1,910,119	$1	10c	8-20-37	.10	5	2⅝	2⅞	⅞
7⅝	2	4,400	4½	2	4⅜	Texon Oil & Land	336,028	$2	15cQ	9-3-37	.60	9¾	5⅜	6⅞	5

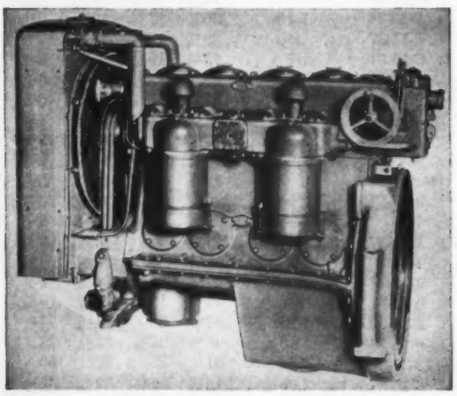
*Ex-dividend. †Includes extras. ‡Payable in Canadian funds.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

NEW OR IMPROVED EQUIPMENT

Murphy Diesel Is in Production After Years of Experiment

Simplicity, ease of starting, foolproof construction, and a simplified, solid-injection fuel system are features of the diesel engine now in produc-



tion by the Murphy Diesel Co., Ltd., of Milwaukee, Wis. The engine is manufactured in two sizes, a four-cylinder model for uses requiring up to 100 hp. continuously, and a six-cylinder model for uses requiring up to 150 hp. continuously. These engines are the result of 16 years of development and large-scale experimental work.

A single control wheel acts as a throttle as well as operating the simple gasoline starting mechanism, enabling the change to be made from gasoline operation to diesel oil at will. The governor, which is actuated by oil pressure, acts as an automatic cut-off for low lubricating oil supply, stopping the engine immediately if oil pressure fails for any reason, and a heat-exchanger between the cooling water and lubricating oil serves to give quick warm-up to the lubricant in cold weather and to prevent overheated oil in hot weather.

The piston construction embodies an alloy metal insulating cup on the piston-head which shields the body of the piston from the heat of combustion. As a result the piston never becomes hot enough to break down lubricating oil. Piston-rings do not stick, and in the cylinder-wall lubrication the oil film is not impaired.

Here and There With Men Who Manufacture Equipment

The L. H. Gilmer Co., Tacony,, Philadelphia, Pa., has appointed Fred Sintes, Jr., district manager in Louisiana, Mississippi and Arkansas for the company's line of V-belts, Kable Kord flat belting and other oil-field belting. Mr. Sintes' headquarters will be in New Orleans.

The mechanical goods division of United States Rubber Products, Inc., has appointed Frederick D. Benz, formerly manager of wire sales at the Chicago branch, district manager of wire sales in the Pacific division, with headquarters in San Francisco. The division comprises the Los Angeles, San Francisco, Portland, Seattle, Spokane and Salt Lake City territories.

The Titusville Iron Works Co., Titusville, Pa., through its Mid-Continent representative, Lew Klein, has opened a new office in the Thompson Building, Tulsa. The company announces two new distributors, the Bridgeport Machine Co. and the United Supply and Manufacturing Co., in addition to the International Supply Co.

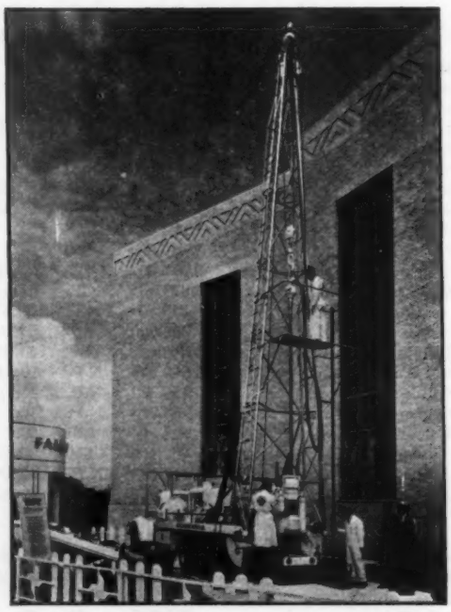
The Babcock & Wilcox Tube Co., Beaver Falls, Pa., has transferred Bruce M. Jones from Beaver Falls to its New York office. Edward D. Emerson has been made New York manager of domestic and export sales.

R. G. Ayers, formerly division engineer for the National Supply Co., has been made assistant to the division sales manager. B. E. Greenewold succeeds him as division engineer.

The International Harvester Co. has moved its general offices to the new Harvester Building, 180 North Michigan Avenue, Chicago, nine blocks north of the old Harvester Building, which it had occupied since 1907.

Pacific Enterprise, with headquarters in Los Angeles, Calif., has established a Mid-Continent warehouse and sales office at 215 North Detroit Avenue, Tulsa. The company will distribute its gas engines, diesel engines, centrifugal pumps and reduction gears. Mid-Continent sales will be in charge of J. H. Wallace.

Alexander W. Limont, Jr., has been appointed manager of the compressor division of the Sullivan Machinery Co., Michigan City, Ind. He had been with the E. I. du Pont de Nemours organization nine years and before that was chief engineer for the Norwalk Iron Works, Norwalk, Conn.

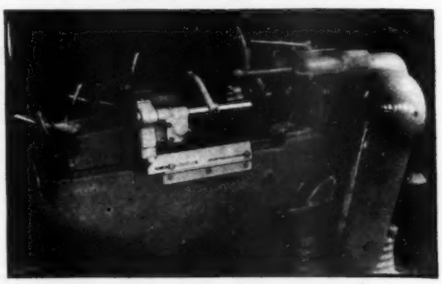


The new "55 Special" drilling rig developed by the George E. Failing Supply Co. and displayed at the Houston oil show is capable of drilling to 3,500 feet. It is mounted on a model D 346F, 215-inch wheelbase, six-wheel International truck with a 34,000-pound gross vehicle rating. The rig is powered with an International gasoline motor 50 and equipped with a 5 by 8 Gardner-Denver pump, powered from the truck through a split-shaft type power take-off.

Automatic Work-Stop Designed as Attachment for Landmaco

The Landis Machine Co., Waynesboro, Pa., has designed an automatic work-stop for use on the Landmaco threading machine. The device may be applied to all Landis standard threading machines employing a model A carriage front.

This attachment may be used to advantage



where it is desired to locate stock in the same relative position for threading. It is particularly applicable to operations where the thread is close to a shoulder, and where thread length for each piece must be maintained.

A bracket fastened to the end of the carriage front supports a horizontal shaft on which a stop-arm is mounted. The stop-arm is adjustable on the shaft for any distance up to the length of the carriage travel of the machine. The end of the shaft nearest the operator is fitted with a pinion gear which engages in a vertical rack-gear. A cam fastened to the bed of the machine is used to actuate the movement of the stop-arm as the carriage moves forward or backward. A roller on the end of the rack-gear operates on the cam to reduce friction between the cam and the rack-gear.

The cam has elongated slots which make it adjustable to any position. When the carriage is back or in position for loading and unloading, the stop-arm is down. After the piece to be threaded is gripped in the vise the cam is set so that the stop-arm rises with the first forward movement of the carriage. This eliminates the possibility of the arm striking the head and causing any damage.

Morgan In Illinois For BJ

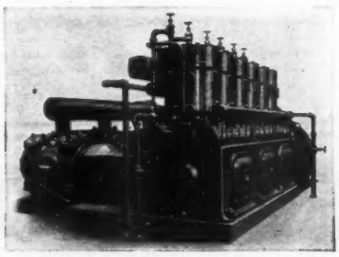
The Oil Tool Division of Byron Jackson Co. announces the establishment of a sales and service office at 425 South Fair Street, Olney, Ill., with O. W. Morgan, Jr., in charge. Mr. Morgan has been connected with Byron Jackson Co. for several years in a similar capacity in California, and has a thorough knowledge of the entire line of BJ drilling and production tools.

Shaffer Opens New Houston Plant

The Shaffer Tool Works has moved into its new plant at 6006 Navigation Boulevard, Houston, Tex. Located on a two-acre site this first unit is 60 by 120 feet in size, and in addition to the necessary machinery for constructing, repairing and servicing the complete line of Shaffer high-pressure control equipment, fishing tools and specialties, contains offices and warehouse room.

Worthington Announces Series of Gas-Engine Compressors

To meet the demand for a medium-size, self-powered, simple and compact air- and gas-compressor unit applicable to the special processing needs of refineries and natural gasoline plants, as well as for gas transportation lines, gas- or air-lift pumping, refrigeration and general compressor services, a line of four-cycle angle-type gas-engine compressors has been developed by Worthington



Pump & Machinery Corp., Harrison, N. J. Combining ruggedness and portability, these type LCE units occupy little space and although designed for permanent heavy-duty work are adaptable for temporary locations.

They are built with one to four compressor cylinders, corresponding to 75 to 300 hp. All compressor cylinders are horizontal and at right angles to the power cylinders. Each compressor cylinder has two corresponding power cylinders and the compressor element can be arranged to deliver any combination of volume and pressure within the limits of the engine rating.

The compressor cylinders are of the standard Worthington design and are fitted throughout with light-weight feather valves. Other features include large water-jackets and close clearances. Regardless of engine-compressor size, most parts are interchangeable. For example, the engine and compressor connecting-rods are identical and interchangeable.

New Dresser Representative

H. R. Shidel is to serve as Southwest oil-field representative for the S. R. Dresser Manufacturing Co., of Bradford, Pa., according to announcement from this company, which manufactures flexible pipe couplings and a complete line of pipe-line repair devices.

Before his connection with Dresser, Mr. Shidel was engaged in various engineering and sales capacities in the oil and gas industries, with his activities confined largely to the Oklahoma and Texas fields. In this new work Mr. Shidel will devote particular attention to pipe-joint problems. Dresser products are widely used in the Southwest for field hookups and transmission lines. Mr. Shidel is to have headquarters in the Shell Building, Houston, Tex.

Bulletins, Booklets and Other Literature for the Trade

A folder obtainable from the Beck Engineering Combustion Kompany, 3033 Adams Street, St. Louis, Mo., describes a new model of Melloblu gas burners for oil-field use.

A convenient file folder issued by the Laminated Shim Co., Long Island City, N. Y., presents detailed specifications of Laminated brass shim stock (Laminum) in such form that essential information on materials, their composition and degree of lamination, stock size and so on, is available at a glance. Copies in reasonable quantity may be obtained on request.

An interesting feature of the current issue of the Wheatley Pumper, published by Wheatley Bros. Pump & Valve Manufacturers, Tulsa, is a statistical analysis showing when, where and how motor accidents happen. Contrary to common belief, it is the Saturday (not the Sunday) driver who kills the most persons.

The Wheelco Instruments Co., 1929 South Halsted Street, Chicago, has issued a bulletin on Wheelco indicating pyrometers ranging in size from the small portable type to the large 8-inch scale wall-mounted type. Several new combination pyrometers and switches are shown.

The Binks Manufacturing Co., 3114-40 Carroll Avenue, Chicago, has published a new set of catalogs containing the latest engineering data and information on its line of water-cooling towers and industrial spray-nozzles.

The dramatic story of man's age-old struggle to control heat, nature's most powerful force, is presented in interesting fashion in a 48-page booklet prepared for distribution by Johns-Manville, 22 East Fortieth Street, New York.

Moore Office in Flora

For the convenience of Illinois operators, Lee C. Moore & Co., Inc., have opened a field office in Flora, Ill. Stocks of derricks and other rig equipment are carried in Clay City. Pumping units are carried in Patoka. Increased demands for Moore products in Illinois have made this expansion necessary.

E. R. Jukes, an experienced Moore man, with a background of many years' service in Kansas, is in charge of the Flora office. His familiarity with both rotary and cable-tool drilling equipment is a valuable asset in his new assignment.

Motor for Pumping Deep Water Wells Is Developed by G.E.

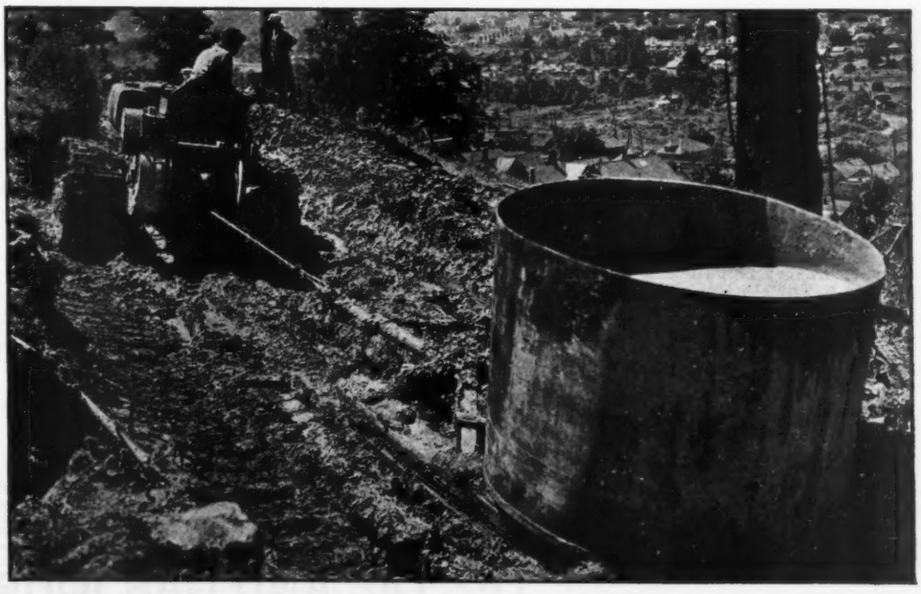
The General Electric Co. has developed a new line of vertical hollow-shaft motors for deep water well pumping service. Among the improvements embodied are a simplified oiling system for the top (thrust) bearing, a ball-type guide bearing, and more attractive appearance. The motors afford high full-load speed, adequate starting torque, high efficiency, double-end ventilation and full mechanical protection.

Industries embracing chemical plants, steel mills, and municipal pumping plants are turning to deep wells for water supply. The deep-well pump is efficient, compact, and furnishes relatively pure water without the necessity of using settling basins or chemicals.

Because deep-well-pump motors usually are located in semiarid regions and subjected to high temperatures the new G.E. motor utilizes a system of double-end ventilation. Cooling air is drawn in under the top cover and through side openings in the motor base. The air cools the coil ends and punchings and then blows out through discharge openings in the stator frame.

Distributor For Republic

Oil-country tubular products of the Republic Steel Corp., Cleveland, Ohio, are now being distributed on the West Coast through the newly organized Howard Supply Co., Los Angeles, Calif. Harold E. Howard is president, L. George Trembley vice president and sales manager, and Arthur Moyer secretary and treasurer. Mr. Howard formerly was associated with the Ducommun Metals & Supply Co. The new company will handle Republic's new heat-treated casing, in addition to oil line pipe, gas line pipe, gasoline line pipe and other products for the oil industry.



"Caterpillar" diesel RD4 pulling a 50-bbl. tank of slush on the Healy Oil Co. operations in the Bradford field, Pennsylvania. This tractor, used for general oil-field service, consumes 6 gallons of 4-cent fuel in eight hours and has to make steep, muddy grades.

Oil Man's Calendar

October

29-30—Dallas, Tex., Mid-Continent Oil and Gas Association of Tex., Annual Meeting and Convention.

October—November

27-Nov. 3—New York, National Automobile Show, Grand Central Palace.

November

4-5—Los Angeles, Calif., American Association of Petroleum Geologists, Pacific Section.

8-12—Chicago, American Petroleum Institute, Eighteenth Annual meeting, Stevens Hotel.

16—New York, Oil Trades Association of New York.

19—Tulsa, Mid-Continent Oil and Gas Association membership meeting, Tulsa Club.

December

6—Memphis, Tenn., National Asphalt Congress.

6-10—New York, American Society of Mechanical Engineers.

6-11—New York, Exposition of Chemical Industries, Grand Central Palace.

7-9—Omaha, Neb., Nebraska Petroleum Marketers, Inc.

8-10—Flint, Mich., S.A.E. National Production Meeting.

14—Tulsa, annual meeting of directors of Mid-Continent Oil and Gas Association.

1938

January

13—Oklahoma City, Independent Oil Jobbers Association of Oklahoma.

17-21—Cleveland, Ohio, American Road Builders Association.

24-25—Minot, N. D., Northwest Petroleum Association, North Dakota Division.

27-28—Minneapolis, Minn., Northwest Petroleum Association, Minnesota Division, Hotel Radisson.

February

(?)—Louisville, Ky., Kentucky Petroleum Marketers Association.

(?)—Columbus, Ohio, Ohio Petroleum Marketers Association.

March

7—Rochester, N. Y., American Society for Testing Materials, Spring Regional Meeting and Group Committee Meetings.

16-8—New Orleans, twenty-third annual meeting, American Association of Petroleum Geologists, Roosevelt Hotel.

April

13-15—Cleveland, Ohio, National Petroleum Association.

13-15—Houston, Tex., Petroleum Industry Electrical Association.

17-21—Dallas, Tex., American Chemical Society

20-22—Buffalo, N. Y., American Institute Mining and Metallurgical Engineers, Open Hearth Conference.

CLASSIFIED ADVERTISING

Leases and Drilling Blocks

NEW Texas Oil and Gas Leases. Large or small tracts for brokers and salesmen. State requirements. H. H. WHITE, P.O. Box 674, San Antonio, Texas.

SECURITY ABSTRACT COMPANY
El Dorado, Arkansas
Fee, Lease & Mineral Ownership on short notice. Ownership maps.

ILLINOIS
A complete weekly report on Illinois operations.
One month.....$5.00
Six months.....$25.00
Sample report on request.
OIL NEWS SERVICE
P. O. Box 146 Flora, Illinois

ARKANSAS
Does not have any production (proration) restrictions. The opportunity for quick "payouts" is obvious. Come here and investigate royalty and lease opportunities
WILLIAM MONROE LAYTON
P. O. Box 411 Texarkana, Ark.

CAN FIND any oil structure that will produce when penetrated. P. O. Box 303 Tonkawa, Oklahoma.

New Mexico OIL LEASES WHOLESALE
40 acres at a time.
Roy G. Barton, Clovis, New Mexico.

Specializing leases twenty acres up dollar acre, East Tex., La., S. Ark. Owners—Attorney, Box 1122, Little Rock, Arkansas.

WE ARE interested in drilling propositions on proven acreage. If you have any such acreage please submit to Box H-994, The Oil and Gas Journal, Tulsa, Okla.

Illinois Oil and Gas Leases
J. R. WINN, REAL ESTATE OFFICE
Mt. Vernon, Illinois.

WHY DRILL A DRY HOLE?
Let me make your location for you with an instrument. Drill to the oil and bring a well that pays off. No guess-work.
R. G. HARRISON
714 E. Uintah St., Colorado Springs, Colo.

HAVE best looking undeveloped quarter in Greenwood Co., Kansas. Hundred barrel well likely. Half interest in same for money to drill thereon. Will put up sufficient interest in following to protect investment. 400 acres with new Bartlesville well. 210 acres new Bartlesville well, and $5000.00 material. T. G. GEBHART, 3728 Edgemont Place, Wichita, Kansas.

I HAVE two block of leases which I will sell for a drilling contract to 3500 feet, said leases located in Hamilton County, Illinois. If interested write or call on George W. Hogan, Jr., McLeansboro, Illinois.

WANTED—Cable driller and rig for development by land owners. By contract, footage or share. Box 127, Lakewood, Ill.

LEASE—ROYALTY near Paluxy-Trinity sand tests East Texas, quick action play 50 for one. E. CROFT, Proctor, Texas.

ILLINOIS BASIN—Three 80 A. leases for sale by operator; each located about ¼ mile from well location. If you want a play in Illinois, don't miss this.
Rm. 724, 39 S. La Salle,
CHICAGO.

Leases and Drilling Blocks

FOR SALE Oil producing leases with many locations yet to drill, leases for sale near production and wildcat leases for drilling contracts.
W. P. HARLEY
Bowling Green, Ky.

OWNER wishes to lease in Montana 320 A. E½ 29-35-13 Hill county and 160 A. NE¼, 24-33-4 Toole county, also 140 A. White county, Ill.
S. HOMAN
7205 Exchange Ave., Chicago.

LARGE drilling blocks, gas well, showings. Royalty, leases, sale, trade, Concordia, Tensas, Catahoula Parishes. JOHN DALE, Vidalia, Louisiana.

FRIO COUNTY—TEXAS
Oil and Gas Lease for Sale by Owner

5700 acres of land in Frio County, Texas, located near center of Amerada Block with Gas Well, making distillate and some oil, drilled near center of this block. Will lease all or part of this tract. Part cash, balance oil payment.
Write FRANK DOERING, Temple, Texas.

OWN 2,000 acres N. Pittsburg, Atoka Cos., Okla. 40 to 1,000 A. tracts, lease, royalty or land $5 to $25 per A. ⅛ cash, ⅛ oil. Townsite on 2 RRS. near production. J. E. CAVANAGH, Baker, Oregon.

HAVE 17,000-acre block that is believed over subsurface structure but will take geophysical survey to determine. Will make any reasonable deal with responsible party to develop. Address W. M. PRATHER, Oakley, Kansas.

Leases and Drilling Blocks

FOR SALE—Yoakum Co. Tex. lease on alleged seismograph high just ahead of production. Favorable drilling site 2 miles long consisting South half Sec. 596 and 597 for $20 per acre, bonus dollar delay rental.
DR. J. A. ROBINSON,
Veterans Adm., Los Angeles, Cal.

THREE PROVEN LOCATIONS to drill, 1900 feet, Branyon Field, Caldwell County, Texas. Allowable 75 bbls. per day. Will give one half interest for immediate development. Address Box J-105, The Oil and Gas Journal, Tulsa, Oklahoma.

1,000 ACRES GIVEN FREE for a Niagara test well, Southern Vigo Co., Ind. Other acreage. Jesse Allen Pimento, Ind.

FOR LEASE by owner W½, Sec. 20-17-19, SE¼, Sec. 30-17-19, Rush Co., Kans. Ten year lease rental at $1.00 per acre. S. Wollman, 808 Buffum, Wichita, Kans.

ILLINOIS—Investors and owners; before you buy, sell or drill acreage, write Research Service, 423 Cuyahoga Building, Cleveland, Ohio.

Royalties

Oil Royalties and Leases Illinois Basin.
Write
Sam B. Raitman Olney, Ill.
226½ Main St. P. O. Box 229

NEW MEXICO Oil and Gas Leases and royalties. Send 50 cents in stamps for new State Oil Map of New Mexico. Roy G. Barton, Clovis, New Mexico.

DEEDED—N.W. Oklahoma oil royalties and leases, near drilling wells or hot spots. I will make U $. Small commission. ENID OIL ROYALTY CO., Enid, Oklahoma.

Royalties

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

PRODUCING OIL ROYALTIES
15 years of experience.
L. H. WITWER
214 Kennedy Bldg., Tulsa, Okla

Oil Royalties and Oil and Gas Leases
Bought and Sold
E. T. Marion
1109 Petroleum Building
Midland, Texas.

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

REPRESENTATION WANTED for Calif. Oil Royalties. California Oil Syndicate, Inc., 1541 N. Western, Los Angeles, Calif.

Business Opportunities

PARTY with capital wanted to develop best oil field in Cuba. New 30 years term law most convenient to producers. Ask for particulars. GUSTAVO ROIG, 4th and 13th Sts., Department No. 8, Almandares, Marianao, Cuba.

Mailing Lists

ROYALTY INVESTORS, by deed. Speculators in low priced leases. Both by states. Oil Industry Mailing List Co., Tulsa Loan Building, Tulsa, Oklahoma.

Financing

CAPITAL raised for development of Oil and Mining properties. Delaware Charters. J. B. Murrow, 299 Broadway, New York.

CAPITAL SEEKERS—Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*
1 Inch	*13 times*	*4.50 per inch*
1 Inch	*26 times*	*4.00 per inch*
1 Inch	*52 times*	*3.50 per inch*

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

CLASSIFIED

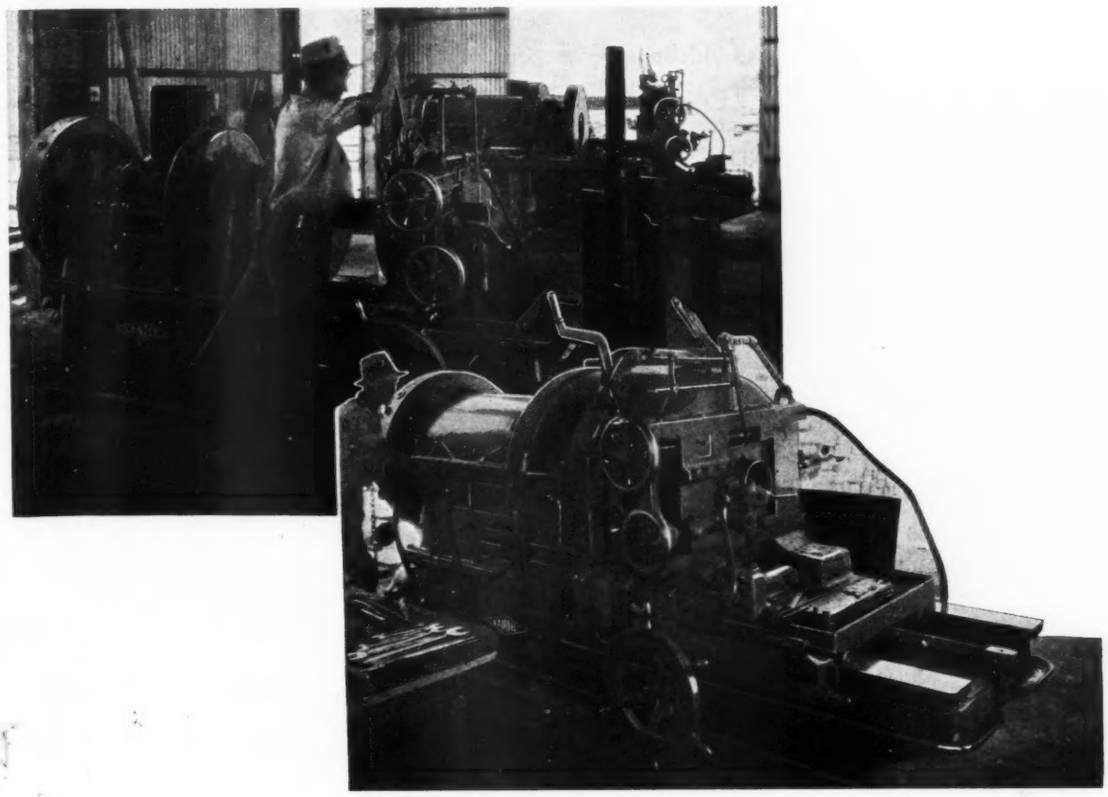
Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*	*7 Lines*	*$2.45*	*$4.20*	*$5.95*	*$7.70*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*	*8 Lines*	*2.80*	*4.80*	*6.80*	*8.80*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*	*9 Lines*	*3.15*	*5.40*	*7.65*	*9.90*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*	*10 Lines*	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

in *Mill* or *Field* the method is LANDIS,— for perfect threading



Pipe Mills throughout the country,—oil fields throughout the world,—wherever there are threads being cut on Casing, Tubing, Drill Pipe etc., you will find LANDIS Receding Chaser Pipe Machines.

The LANDIS Receding Chaser Pipe Machine and the Patented LANDIS Tangential Chaser have set new standards in threading, in both the Mill and Field. These standards based on *Accuracy* and *Production* are possible only because of the many distinctive features built into our Receding Chaser Machine.

Threads with correct form and taper. *Threads* with a perfect finish. *Threads* that make up fast and are leak-proof, *Threads* that pass the most rigid inspection, these are the characteristics of threads when cut with the LANDIS Receding Chaser Machine.

May we send you more information?

LANDIS MACHINE COMPANY, Inc., Waynesboro, Penna., U. S. A.

REPRESENTED IN THE DOMESTIC OIL FIELDS BY:

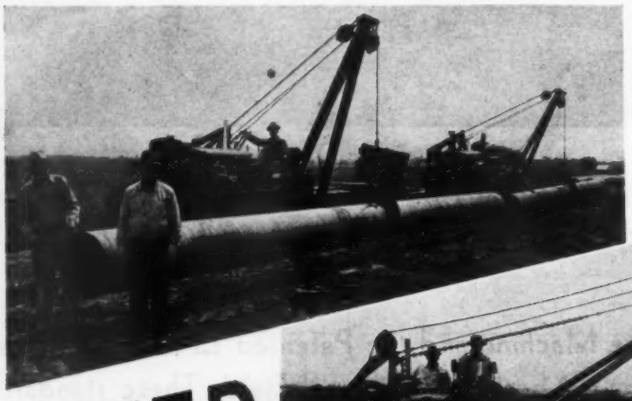
Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; D. S. Mair Machinery Corp., Houston and Dallas, Texas; Murray, Baker, Fredrick, Inc., New Orleans, La.; Moore Machinery Co., Los Angeles and San Francisco, Calif.; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription prices: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.

Ready ---- GO!

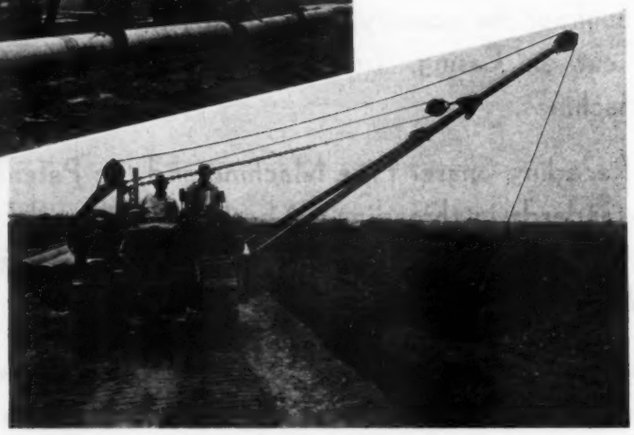
Three PG Sidebooms with "Caterpillar" RD6 Diesel tractors, three PJ Sidebooms with "Caterpillar" RD7 Diesel tractors and Model V Backfiller with "Caterpillar" RD4 Diesel tractor.

These are CARDWELL ALLSTEEL "Caterpillar" mounted pipe line booms and backfiller al ready to go from scratch on the Panhandle Eastern 24" pipe line . . . the race is for PROFITS—and HOW . . Profits to the Panhandle Eastern Pipe Line Company in getting their job finished on time and Profits to Bibb Contracting Company by keeping the job going without loss of time.



PG Sideboom with "Caterpillar" RD6 Diesel tractor and PJ Sideboom with 'Caterpillar" RD7 Diesel tractor.

LINE UP CREW
READY TO START JOB



Model V Backfiller with "Caterpillar" RD4 Diesel tractor

SPEED

Ahead of Schedule Completion — That is what counts with the Contractor when there is a job to be done — and DONE WELL.

Note wide range of visibility and easy accessibility of controls.

CARDWELL ALL STEEL
REG. U. S. TRADE MARK PAT. OFFICE
THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

ALLSTEEL PRODUCTS MFG. CO.
Wichita, Kansas, U. S. A.
801 So. Wichita St., P. O. Drawer 2001
Cable Address "ALLSTEEL" Phones L. D. 289, Local 4-4381—4-4389

Our products described in the COMPOSITE CATALOG
SEE PAGES 83-84-85-86 1937 ISSUE

3 ARE LESS TROUBLE THAN 10!

THESE 3 EAGLE BEARING METALS will fill 95% of all your requirements

EAGLE DREADNAUGHT
Tough metal for bearings subject to extreme speed and heavy pressure conditions—for bearings of high-powered generators, motors, turbines, Diesel engines, oil, gas and gasoline engines, pumps, air compressors . . .

EAGLE OUTLASTA
General service metal for bearings where even speed and pressure conditions prevail. Will safely and efficiently carry a heavy load when bearings are ¼" or more in thickness and of liberal area.

EAGLE DURABLE
A superior bearing metal for less severe bearing requirements. Made of highly refined metals, free from impurities or dross, carefully alloyed. Uniform in structure and hardness.

- These three Eagle Bearing Metals are made of the best grades of refined primary metals. Toughness and structure are uniform always. They contain no hard spots to cut and score the shaft . . . they will not grip or weld to the shaft if bearings become heated . . . they will conform to irregularities.
- Eagle Bearing Metals are sold exclusively through recognized jobbers.

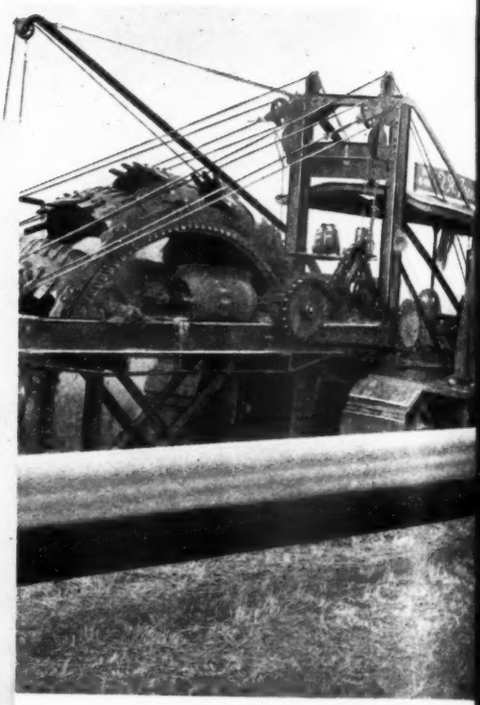
THE EAGLE-PICHER LEAD COMPANY

Other Eagle Products for the Oil Fields . . .

Eagle Lead Wool and Containers
Eagle Rope Socket Metal
Eagle Sheet Lead
Eagle Sublimed Litharge
Eagle Sublimed Blue Lead
Eagle Super "66" Plastic Insulation
Eagle Blanket Insulation
Eagle Insulseal (waterproofing cement)
Eagle "77" Pipe Covering
Eagle "111" High Temperature Insulating Cement

CHICAGO, CINCINNATI, JOPLIN

SMITH LINE PIPE



SMITH
LINE PIPE

A.O. SMITH
CORPORATION

...ISED BY PANHANDLE EASTERN

THE Panhandle Eastern Pipe Line Company . . . like the majority of leaders in the field . . . is using Smith Line Pipe for 1937 construction. In their expansion program, they are securing the full benefit of the physical characteristics of Smith Line Pipe, achieved through A. O. Smith research and production methods. • The higher yield strength of Smith Line Pipe permits the required carrying capacity at lower cost for construction . . . and replacement. Engineered and manufactured not as "tonnage," but to be a long-time investment in transportation equipment, Smith Line Pipe offers many construction and operating advantages to you, and A. O. Smith production facilities protect you from disappointment when your delivery requirements press.

A. O. SMITH CORPORATION
MILWAUKEE, WISCONSIN
District Offices: New York • Cleveland • Chicago • Tulsa • Houston • Los Angeles

PIONEER MANUFACTURERS OF ELECTRIC-WELDED

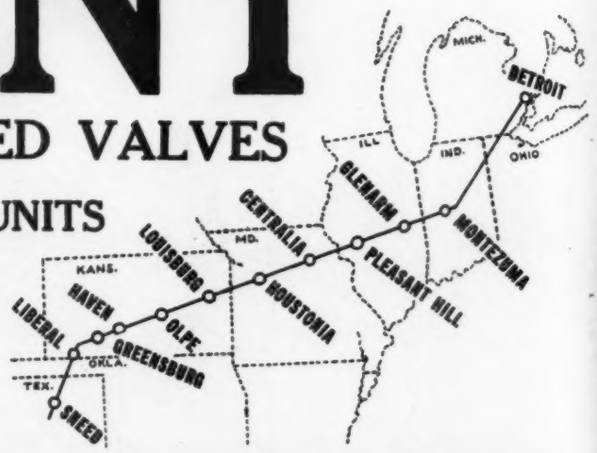
LINE PIPE

SMITH HIGH YIELD CASING • SMITH PRESSURE VESSELS

NUGENT

OIL-FILTERS AND SIGHT-FEED VALVES

ON ALL OF THE 62 COMPRESSOR UNITS OF THE PANHANDLE-EASTERN NATURAL GAS PIPE LINE



MAP OF THE LINE SHOWING COMPRESSOR STATIONS

30 GRAVITY FILTERS INSTALLED
For the Cooper-Bessemer Compressors

44 PRESSURE FILTERS INSTALLED
For the Worthington Compressors

All the oil used on the bearings of these 62 mighty Cooper-Bessemer and Worthington engines is filtered through NUGENT OIL FILTERS and used over and over again. NUGENT SIGHT FEED VALVES having removable sight glasses for easy cleaning without stopping the oil flow, feed the proper amount of oil to each bearing.

NUGENT OILING and FILTERING SYSTEMS were used on the Chicago Line . . . and now are being installed on the Panhandle Line serving Detroit, Mich. This is a tribute to NUGENT DESIGN . . . NUGENT PERFORMANCE . . . and NUGENT EXPERIENCE based on MORE THAN 30 YEARS OF SERVICE.

Write for Illustrated Bulletins.

1050 Nugent Sight Feed Valves installed on both makes of Compressors.

Interior of existing station at Liberal, Kansas, showing Cooper-Bessemer installation. Two additional Cooper-Bessemer units were added this year, raising the station total to 7,000 H.P.

Battery of Worthington units in this interior view of Fritch station on the Natural Gas Pipeline Co. of America line, is typical in arrangement to the Worthington installations being made on Panhandle Eastern project.

Wm. W. Nugent & Co., Inc. Mfrs.
Oil Filters, Oiling and Filtering Systems, Telescopic Oilers, Oiling Devices,
Sight Feed Valves, Flow Indicators, Compression Union Fittings, Oil Pumps, Etc
407 N. Hermitage Ave. Established 1897 Chicago, U. S. A.

"PARADE OF THE VALVES"

Big brutes of valves, little baby valves. Needle valves, globe valves, gate valves, pop valves. Brass, steel, iron and alloy valves. Valves for gas, air, oil, water, steam and chemicals. Any kind of valve—the biggest valve parade on earth!

Crane makes them—from a 40-cent "dwarf" to a 40-ton monster, Crane has the valve you want. You'll find them in the Crane No. 52 Catalog.

Maybe your valve problem seems special. Maybe you are wrestling with higher temperatures, greater pressures. Save time and cost by making use of Crane's 82 years of experience in valve making. You'll find the solution for most valve and piping problems in your Crane No. 52 and other Catalogs. They contain the details regarding over 38,000 items, tested in the laboratory and proved on the job. Use them whenever you need valves, fittings, pipe or accessories. CranEquip for satisfaction.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE PUMPS PLUMBING AND HEATING MATERIAL

plied in the next few days.

"HARD BOILED" VALVES

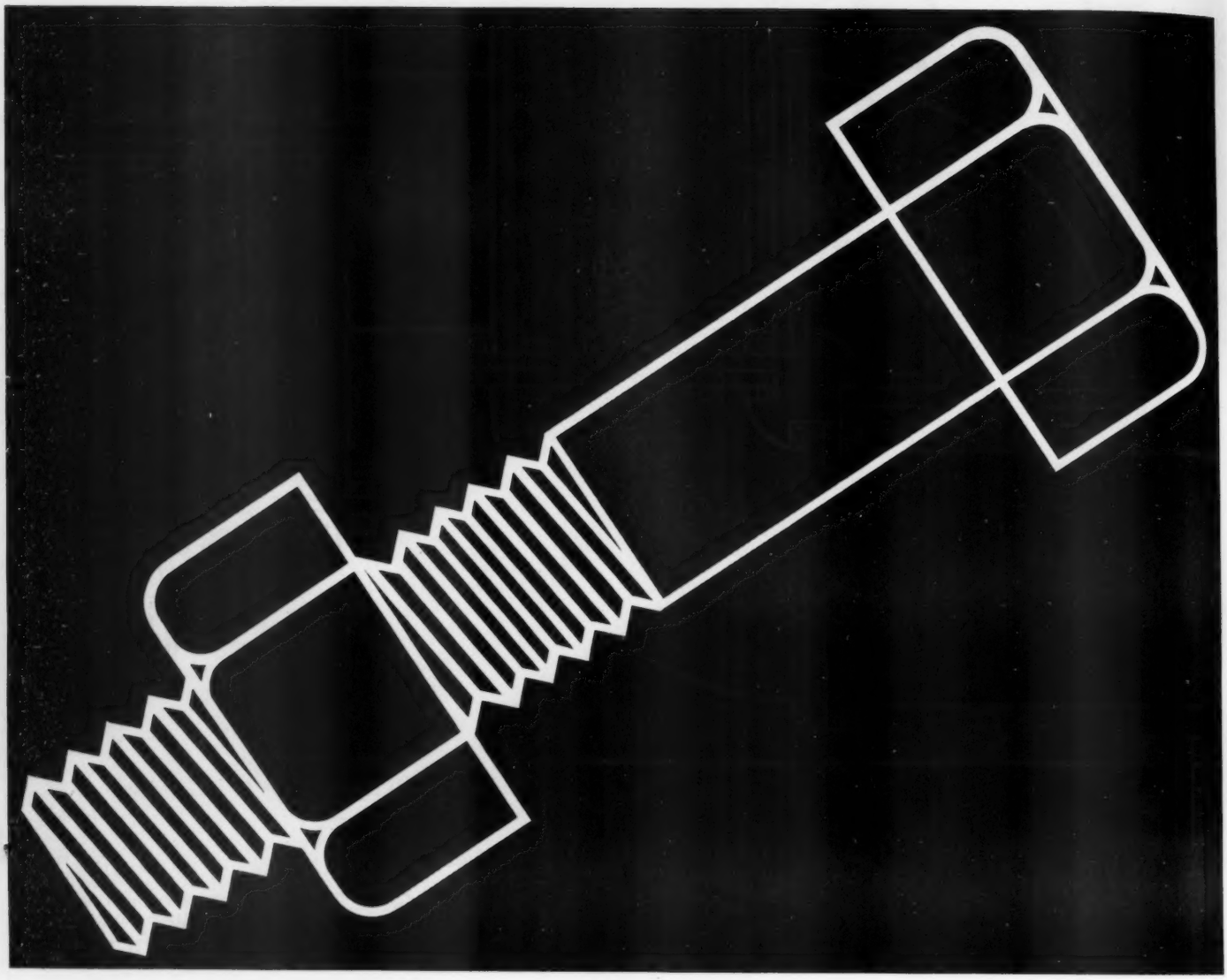
TULSA, OKLA., Sept. 7—The oil industry is no place for weak sisters. Equipment has to be "hard boiled" to last in the oil country. There isn't another industry in the country in which valves, fittings and piping have to take it, and like it, as they do when handling oil from the bottom of the hole to the tank on the rear of a car or to the bearings of a battleship.

That's why Crane puts so much extra strength into all its oil field products. Crane designers, Crane engineers, Crane metallurgists, all read A.P.I. and A.S.M.E. specifications in just one way. They look to see what the maximum requirements are—and then they better them in finished Crane products.

More than that, Crane is always anticipating oil country, pipe line and refinery needs. Valves and fittings are constantly being designed to handle temperatures and pressures not used at present. They are tortured in every conceivable way to test them in the laboratory—then they are spotted around the country in tough services and given "the works." That's how accepted Crane designs originate. Crane is ready for oil country demands in proven territories, in wildcats that need taming and in all refining services.

Pack Your Problems Off to Crane

If there is some "hot spot" making trouble in your lines or on your equipment, give us a chance to look it over. There may be a piece of regular CranEquipment that will do the job. Or it may require special treatment. Anyway, ask Crane about it. We can give you the answer if anyone can.



"Take care of the pennies . . ."

One bolt is small, and comparatively inexpensive—either to buy or to make. But—bolts "in the mass" can easily represent a very considerable outlay. The saving of even a small fraction of a cent in the production cost may come to a substantial sum in the aggregate.

For example: One concern has standardized on Chrome-Moly (SAE 4140) bolts because they are easier to machine—resulting in savings on both tool expense and machining time. In addition, their improved physical properties assure better service performance.

Moly steels are cutting production costs throughout industry because they are more economical to fabricate—whether the process be heat-treating, forging, carburizing, or machining. . . . They also impart to finished products higher quality, resulting in better service.

Our free technical book "Molybdenum," will prove useful to engineers and production heads interested in cost cutting and product improvement. Our monthly news-sheet, "The Moly Matrix," keeps readers informed on Moly developments. Consult our laboratory when ferrous problems get tough. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

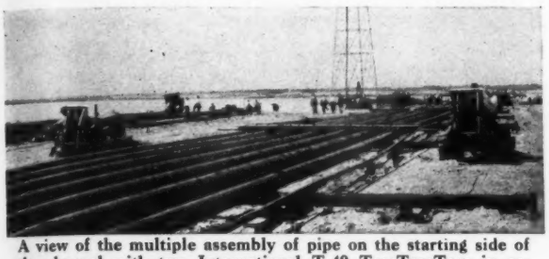
Climax Mo-lyb-den-um Company

MOLY

Again INTERNATIONAL TRACTRACTORS Score a Beat!

LAY 8 LINES OF PIPE Across the Houston Ship Channel in 3½ Hours

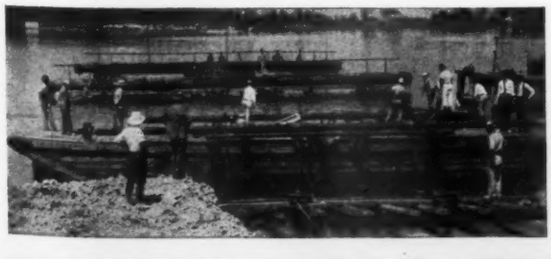
Close-up of two of the nine International TracTracTors that laid the Houston ship channel crossing. These are Model T-40's with winches which are operated by the powerful engine built into these units.



A view of the multiple assembly of pipe on the starting side of the channel with two International T-40 TracTracTors in action, pulling this mass of steel.

These two International T-20 TracTracTors held the pipe assembly in position as it was being pulled over the rollers on the starting side and unreeled the cable from the winches on the Model T-40's.

The International TracTracTors provided a steady flow of power to the winch lines during the big pull when every minute counted.



The multiple pipe line as it was landed on the receiving shore side, just about ready to be tied into the main line system.

EIGHT LINES of pipe totaling 15,200 feet and weighing approximately 1,500,000 pounds with their rust-resisting wrappers and anchor weights lay parallel on the banks of the Houston ship channel near Baytown, Texas, one morning, waiting to be pulled in one mass across the channel which is over a quarter of a mile wide and 50 feet deep at this point.

For weeks, engineers and workers had prepared for this moment, making every possible arrangement so that this project, one of the biggest of its kind ever attempted, would go through without a hitch. Time was a vital factor. The War Department had given permission to suspend all ship traffic on this busy waterway for five hours. The job had to be finished in the allotted time. Actually, the crossing was made in three and a half hours.

The zero hour of 10 a. m. approached. Watches were out. Everyone was on the alert. Promptly on the hour, up went green signal flags in the hands of three signalmen placed at vantage points, and the tractor operators gave their charges the gun. The huge mass of steel started moving under the power of five INTERNATIONAL TracTracTors. Six 10-inch lines, one 8-inch line, and a 3-inch communication line were dragged across the bottom of the channel by the INTERNATIONALS which delivered a steady flow of power like champions. As the pipes entered the water, the ends were secured to a barge and pontoons and thus directed across the channel. When the job was finished, a diver went down under and came back with the report that everything was okay. The difficult crossing was handled perfectly in record time.

Nine INTERNATIONAL TracTracTors were on this job. Five Model T-40's equipped with winches rated at 50,000 pounds each on a straight-line pull did the pulling. They were assisted by four Model T-20 TracTracTors. Three of the T-40's and two T-20's were on the starting side of the channel. Nearly a half-mile away on the other side were the other TracTracTors, the two T-40's with their winch lines connected to the forward end of the pipe assembly. After each pull of about 400 feet by the five T-40's, the T-20's rushed in and pulled the lines from the winches. These smaller TracTracTors were also used to keep the multiple pipe assembly from sliding off the rollers on the starting side.

INTERNATIONAL TracTracTor power and stamina *on the job* is the best recommendation of their ability to handle your work. Find out more about TracTracTors and what they can do from the nearby industrial power dealer or Company-owned branch. The INTERNATIONAL Industrial Power line includes wheel and crawler tractors (gasoline and Diesel), and power units (gasoline, Diesel, natural gas, and distillate) ranging up to 110 max. h.p.

INTERNATIONAL HARVESTER COMPANY
(Incorporated)
HARVESTER BUILDING CHICAGO, ILLINOIS

INTERNATIONAL HARVESTER

Universally USED

for SEISMOGRAPH, Core-Drilling and Geophysical Work

Gardner-Denver FXF & FXG Power Pumps

(4 x 5) (4½ x 6)

Built for heavy duty—but minus excessive weight—Gardner-Denver FXF and FXG Power Pumps are specially designed for use with portable drilling rigs for seismograph, core-drilling and geophysical work. Here are some of the reasons why they will do a better job for YOU—

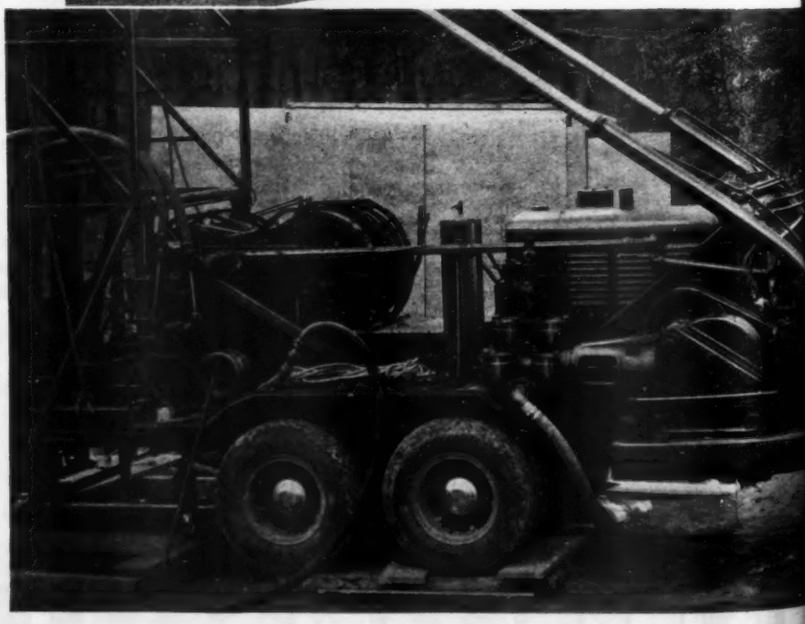
- **Increased mechanical efficiency due to herringbone gears.**
- **One-piece Valve Pot Type Fluid End with each valve individually accessible.**
- **Convenient suction openings—suction may be taken from either side.**

GARDNER-DENVER CO., Quincy, Illinois

Oil Country Offices:

Dallas • Houston • Kilgore • Tulsa • Los Angeles • San Francisco

Since 1859



GARDNER-DENVER

Method of properly storing NO-OX-ID Treated Pipe.

DEARBORN CHEMICAL COMPANY

Invites Your Attention

to the constant use of NO-OX-ID for the protection of pipe lines, as well as other steel equipment in the Oil and Gas Industry. It is chemically compounded and manufactured in various consistencies to meet requirements as indicated by surveys or other investigations. It is available in various combinations, combined with suitable wrapper and shield to cope with the most severe conditions.

There is a NO-OX-ID, or combination, that is particularly suited to your requirements, based on years of experience and practical use, which places us in a position to make recommendations to your advantage.

NO-OX-ID can be applied cold by hand, or hot by machine.

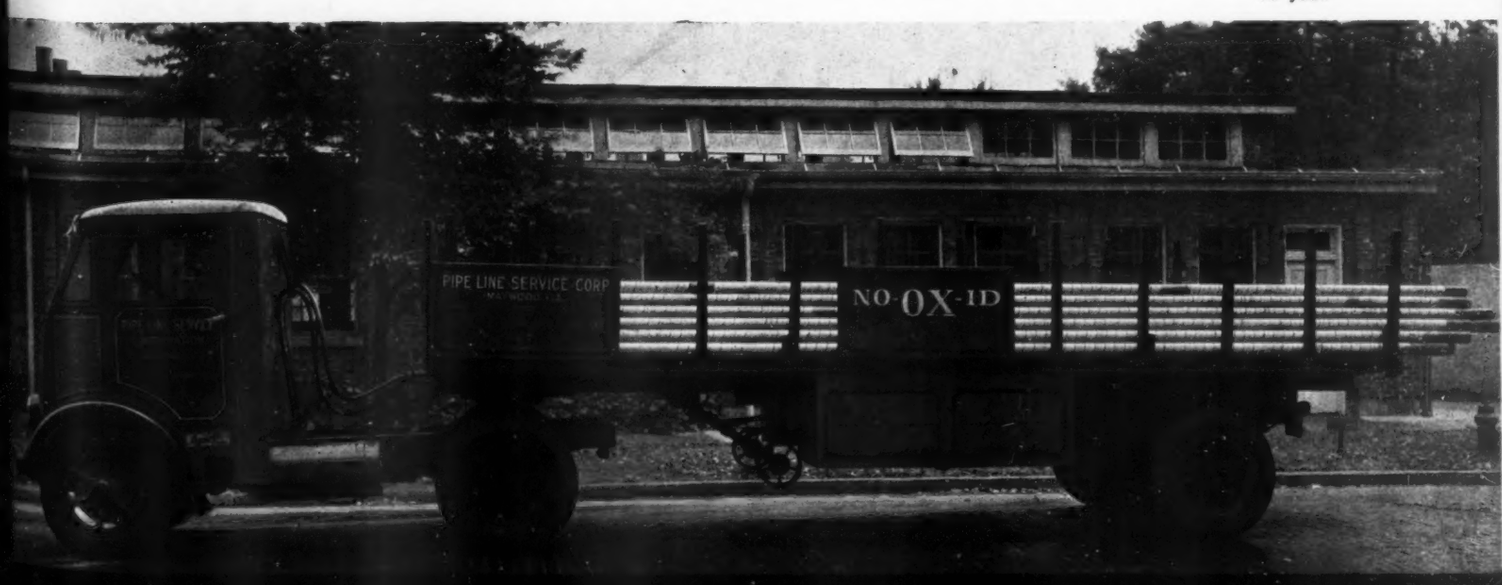
The constant use of NO-OX-ID over a period of years in the pipe line field has proved it a satisfactory material for the purpose.

Address us 310 South Michigan Avenue, Chicago, Illinois.

NO-OX-ID
IRON-OX-RUST
TRADE MARK
The Original Rust Preventive

★

NO-OX-ID Treated Pipe may be satisfactorily handled in shipment to job.



"YOU'VE GOT SOMETHING THERE..."

O.L. MULTIPLEX

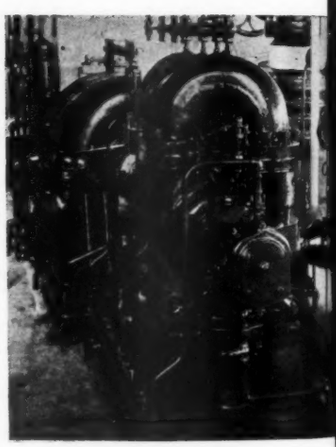
NO THRUST LOAD

Byron Jackson O. L. MULTIPLEX Pumps do not have heavy, power-consuming, trouble-making thrust bearings; they are not necessary. Back-to-back mounting of impellers balances 90% of the hydraulic thrust load, and the remaining 10% is almost completely eliminated by using properly dimensioned hub-rings without the addition of auxiliary parts. This patented method is not available on conventional pipe line pumps.

The extremely rugged construction and reliability of Byron Jackson "OIL LINE" MULTIPLEX PUMPS are responsible for their outstanding success and whole-hearted approval for pipe line service.

Long, external cross-overs provide good hydraulic lines between stages, thus increasing efficiencies. Extra-deep stuffing boxes at suction pressure, combined with rugged shafts and hardened shaft sleeves, make packing problems negligible. Capacities range up to 75,000 barrels per day against pressures as high as 1,200 pounds per square inch.

Your request for specifications will receive prompt and careful attention.



A recent installation with six pumping stations, included five Byron Jackson 6-stage O. L. Multiplex Pumps and one 4-stage—all steam turbine driven.

BYRON JACKSON CO.

Established 1872

Berkeley • LOS ANGELES • Bethlehem
New York • Fort Worth • Houston

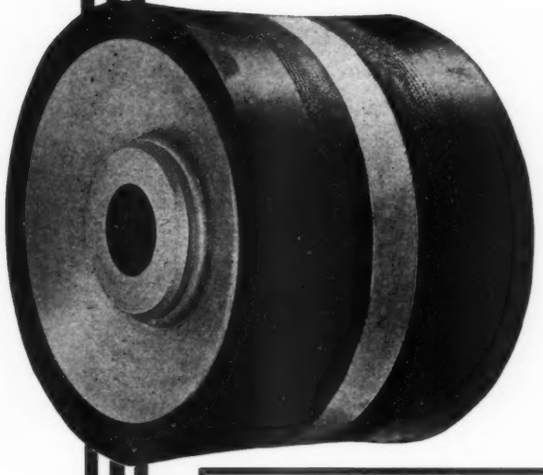
BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

IMPROVED MISSION SLUSH ★ PUMP PISTON

CUTS UPKEEP COSTS IN HALF

REPLACEABLE ***Rubbers*** ON A LONG LASTING BODY



★ **SAVES MONEY**

formerly invested in continually buying new bodies.

★ **LIFE OF LINERS AND PISTONS INCREASED**

Principle of more rubber and less metal gives far greater wiping surface, eliminating by-passing.

SAVING MONEY FOR SUCCESSFUL OPERATORS IN EVERY OIL COUNTRY

HOUSTON OCTOBER 11-16-1937
SEE OUR EXHIBIT
OIL WORLD EXPOSITION

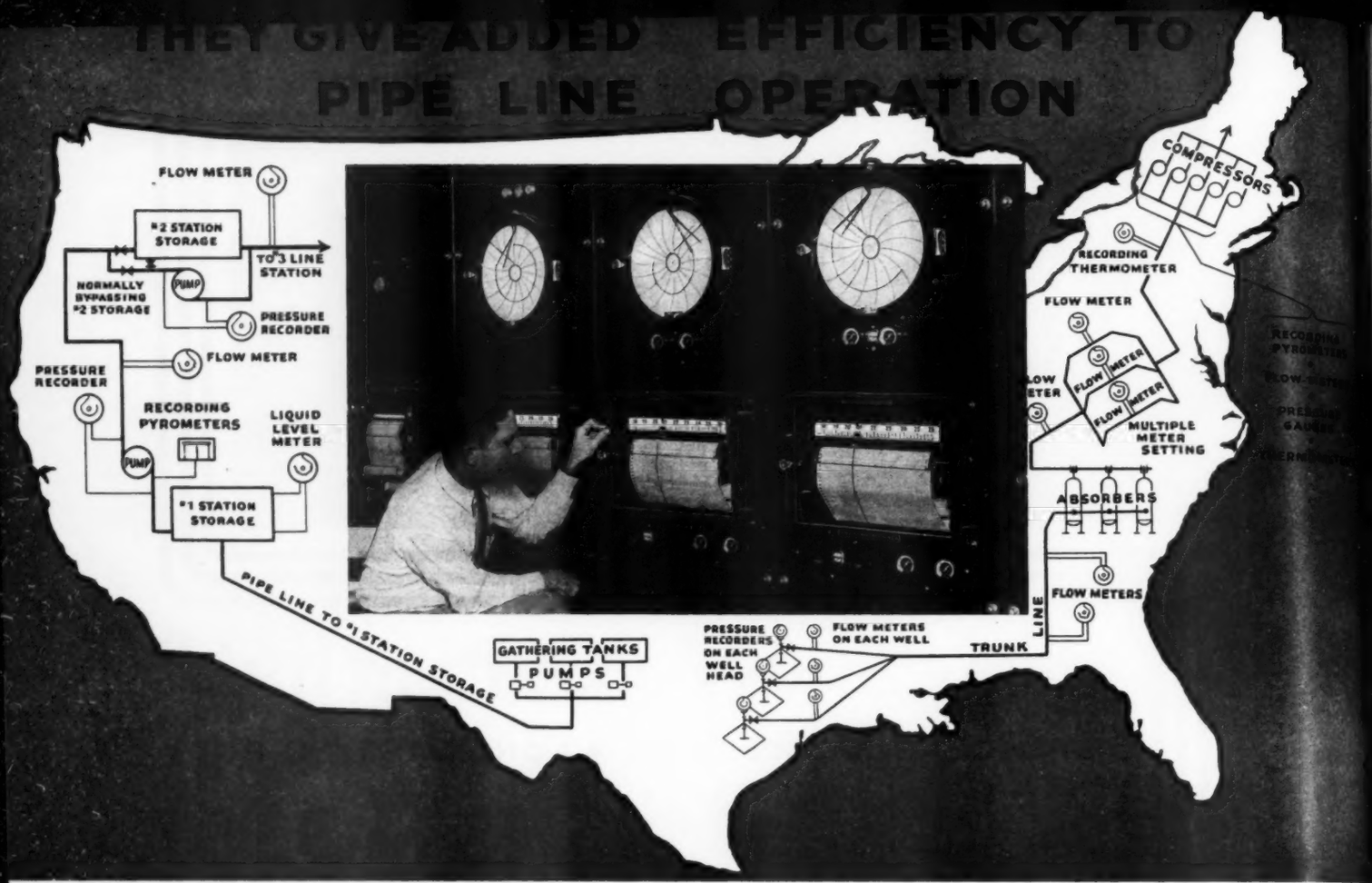
MISSION MANUFACTURING CO.

HUMBLE ROAD - - - - - - - - - - HOUSTON, TEXAS

Mission Slips . . . Mission Valves . . . Mission Pistons . . . Mission Piston Rods . . . Mission Swabs

Sold Through Supply Stores Everywhere

THEY GIVE ADDED EFFICIENCY TO PIPE LINE OPERATION



Highest pipe line efficiency—and minimum pipe line operating costs—are easily achieved when temperatures, pressures, flows and liquid levels are accurately measured and controlled.

Brown Indicating and Recording Controllers are indispensible for this purpose. Extremely accurate, and fully dependable, they perform the most exacting job of measurement and control. On well-heads and pump engine exhausts—at absorber plants and compressor stations—on trunk lines or gathering systems—Brown Instruments instantly reveal any deviation from the most efficient operating conditions. The information imparted by Brown Instruments shows you where to prevent waste and stop losses.

Brown Instruments are rugged. Their accuracy and dependability is not affected by climatic or atmospheric conditions.

Here are a few of the uses for Brown Indicating and Recording Instruments—on crude oil pipe lines as well as natural gas.

Potentiometer Pyrometers—On the exhausts of Pump or Compressor Engines, indicating the work done by each prime mover cylinder. Catalog No. 1102.

Flow Meters—On Natural Gas Gathering System to measure production of each well—on Trunk Lines to totalize production—at Absorber Plants to measure quantity of gas to individual absorbers—on Crude Oil Storage Stations to measure leakage. Catalog No. 2005.

Recording Pressure Gauges—On Natural Gas Well-Head, for continuous record of well pressure—for Crude Oil and Natural Gas Pumping Stations, to determine work done by each station and reveal line breakage or stoppage. Catalog No. 6704.

Flow Controllers—To take specified delivery of Natural Gas from any particular well or group of wells. Catalog No. 8902.

Liquid Level Recorders—For Crude Oil Storage Tanks—to give ready measurement of tank level. Catalog No. 6704.

Recording Thermometers—For Natural Gas—at Absorption Plants and Compressor Stations. Catalog No. 6704.

Our engineers will gladly consult with you, and help you in applying Brown Indicating and Recording Instruments to your pipe line. Write for information and Catalogs to THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4488 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Toronto, Canada: 117 Peter Street—Amsterdam-C, Holland: Wijdesteeg 4—London, England: 70 St. Thomas' Street, S.E. 1.

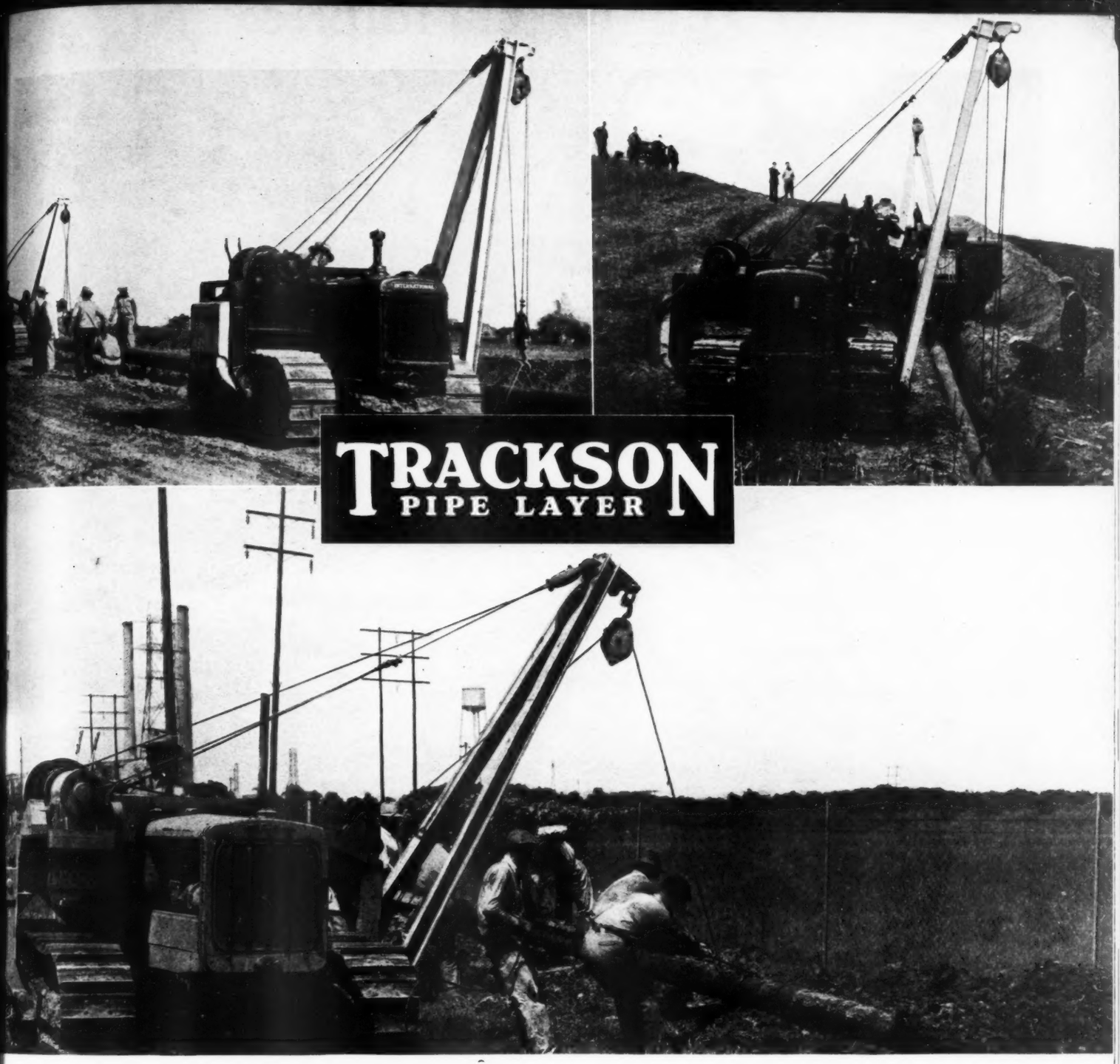
BROWN INSTRUMENTS

AND

MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS

RECORDING ---- INDICATING ---- ELECTRIC AND AIR OPERATED CONTROLLERS

To Measure and Control is to Economize

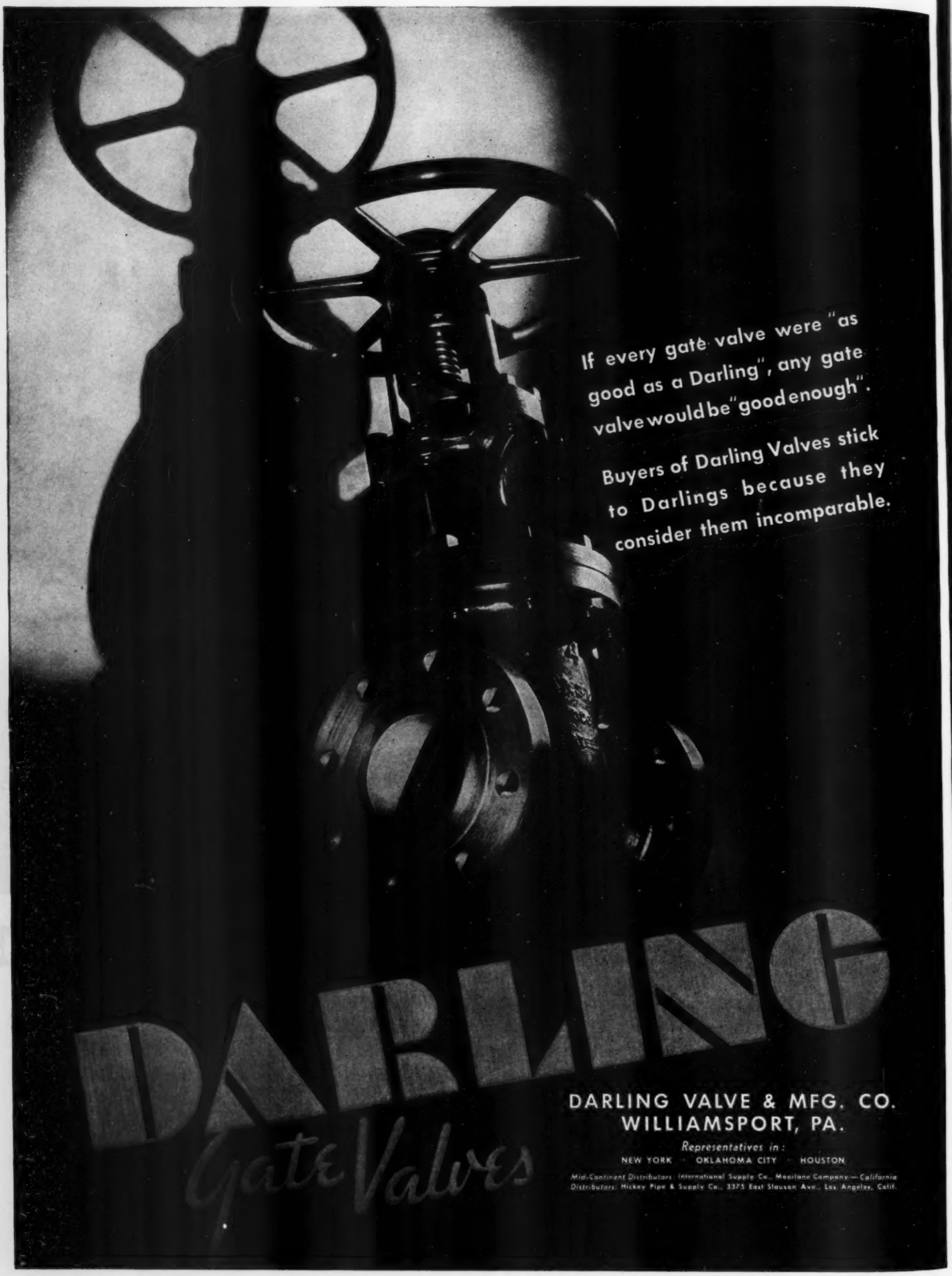


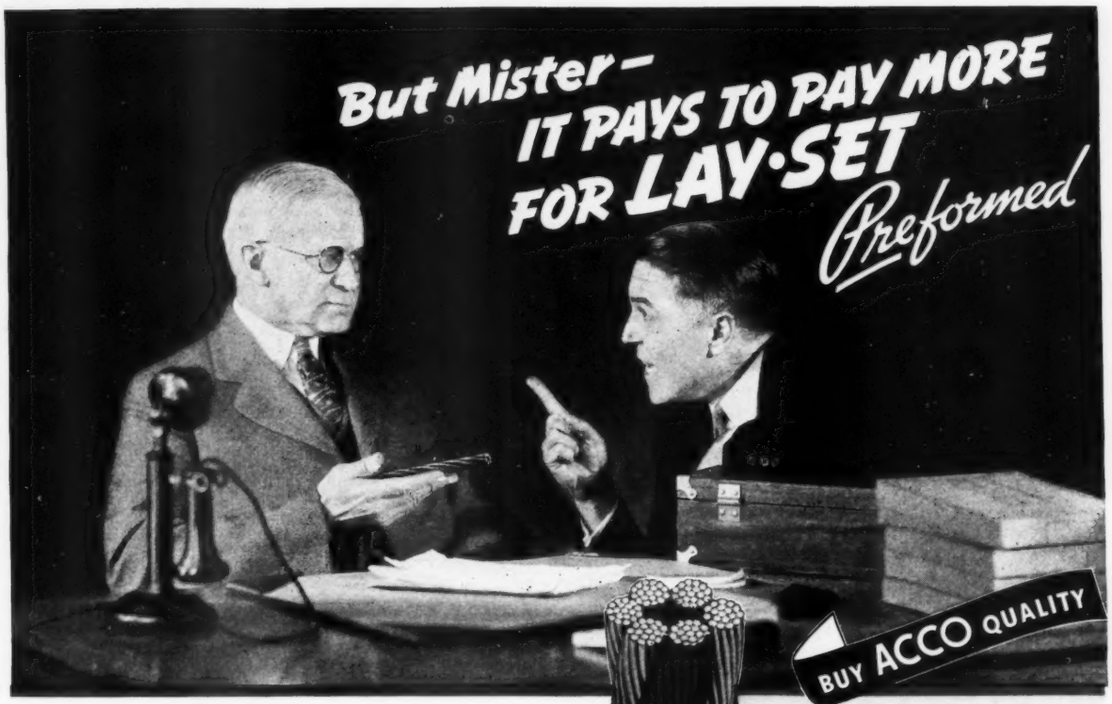
TRACKSON
PIPE LAYER

FOR EVERY PIPE LINE JOB

TRACKSON PIPE LAYERS are safe, fast and dependable, incorporating every practical feature for efficiency and economy. They are built to stand up under the toughest cross-country service, and are easy to handle on any right-of-way—uphill or down — because of convenient controls, good balance and compact construction. Greater safety is assured because both boom and load line raise and lower through worm-driven winches *under full power control.* A separate friction clutch and brake on the load line drum permits instant release of the load or lowering against the brake as desired. The special Trackson transmission gives a choice of three speeds in either direction. The main frame is low, giving full visibility to the driver, and may easily be removed when the tractor is to be used extensively for other work. These and many other wholly *practical* features account for the increasing popularity of Trackson Pipe Layers throughout the industry. Sold and serviced wherever pipe lines are layed . . . Write for full details . . . Trackson Company, Milwaukee, Wisconsin.

SAFER WORK—FASTER WORK—AT LOWER COST


If every gate valve were "as good as a Darling", any gate valve would be "good enough".
Buyers of Darling Valves stick to Darlings because they consider them incomparable.
DARLING
Gate Valves
DARLING VALVE & MFG. CO.
WILLIAMSPORT, PA.
Representatives in:
NEW YORK · OKLAHOMA CITY · HOUSTON
Mid-Continent Distributors: International Supply Co., Mearlane Company—California Distributors: Hickey Pipe & Supply Co., 3375 East Slauson Ave., Los Angeles, Calif.



● "Sure it costs a little more—but listen: the increased service you will get out of LAY-SET Preformed will more than justify the slight differential in first cost. For instance:

"Your men can reeve LAY-SET in place and get your drilling rig back into profitable production in about half the time they would spend on non-preformed. Then, with LAY-SET, your machine will have much longer continuous operation—because LAY-SET will last longer.

"If LAY-SET Preformed wears out to the point where the crown wires part—they won't wicker out to jab workmen's hands. It's a safe rope to handle. It resists kinking; almost refuses to whip and spools on the drum perfectly. Being preformed it resists the fatigue of reverse bending. Believe me, sir, (and we've been in business for 91 years) LAY-SET Preformed is a much better rotary line."

HAZARD WIRE ROPE DIVISION
ESTABLISHED 1846
AMERICAN CHAIN & CABLE COMPANY, Inc.
WILKES-BARRE, PENNSYLVANIA

GREEN SIGNIFIES SAFETY

Branches and Distributors
in all Oil Field Centers

In Business for Your Safety

A FEW OF THE 137 AMERICAN CHAIN & CABLE INDUSTRIAL PRODUCTS

AMERICAN CHAIN DIVISION
(DOMINION CHAIN COMPANY, Ltd., in Canada)
Weed Tire Chains • Welded and Weldless Chain • Malleable Castings • Railroad Specialties

ANDREW C. CAMPBELL DIVISION
Abrasive Cutting Machines • Floformers Special Machinery • Nibbling Machines

FORD CHAIN BLOCK DIVISION
Chain Hoists • Trolleys

HAZARD WIRE ROPE DIVISION
Green Strand Wire Rope • "Korodless" Wire Rope • Preformed Spring-Lay Wire Rope • Guard Rail Cable

HIGHLAND IRON & STEEL DIVISION
Wrought Iron Bars and Shapes

MANLEY MANUFACTURING DIVISION
Automotive Service Station Equipment

OWEN SILENT SPRING COMPANY, Inc.
Owen Cushion and Mattress Spring Centers

PAGE STEEL AND WIRE DIVISION
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READING STEEL CASTING DIVISION
Electric Steel Castings, Rough or Machined

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Chain Hoists • Electric Hoists and Cranes

LAY·SET *Preformed* ROTARY LINES

✲ ALL HAZARD WIRE ROPES MADE OF IMPROVED PLOW STEEL ARE IDENTIFIED BY THE GREEN STRAND

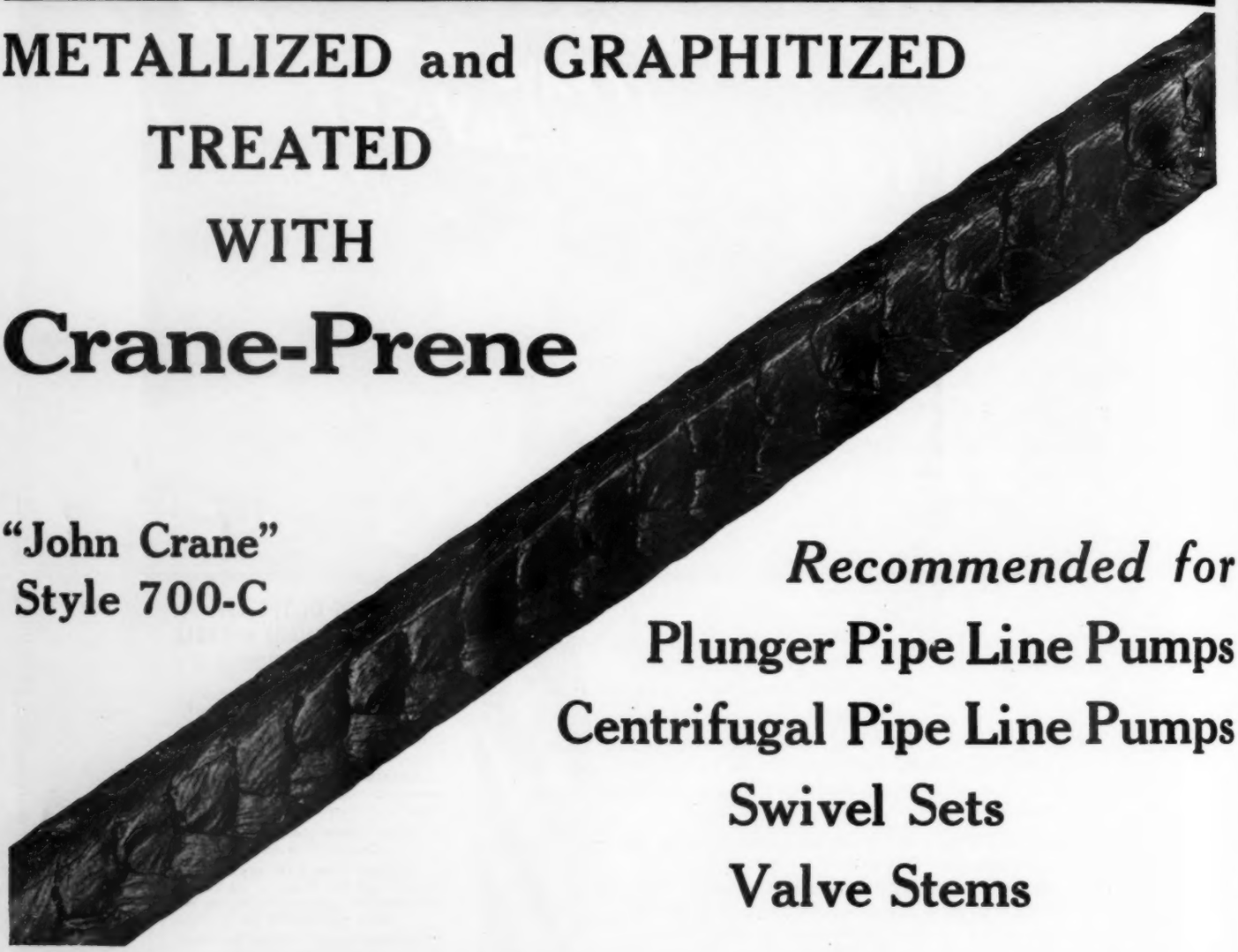
New FLAX PACKING!

METALLIZED and GRAPHITIZED

TREATED

WITH

Crane-Prene



"John Crane"
Style 700-C

Recommended for

Plunger Pipe Line Pumps

Centrifugal Pipe Line Pumps

Swivel Sets

Valve Stems

OIL-CRUDES-DISTILLATES

"John Crane" Style 700-C is made from long line flax chain, metallized, graphitized and treated with Crane-Prene, an oil and gasoline proof binder. This new flax packing reduces friction to a minimum. It outlasts ordinary flax many times over, gives long and efficient service on the above applications. Specify it on your next order. See if it does not lower your operating expenses by lasting longer.

CRANE PACKING COMPANY

1805 CUYLER AVENUE — CHICAGO, ILLINOIS

Branch Offices and Stocks in

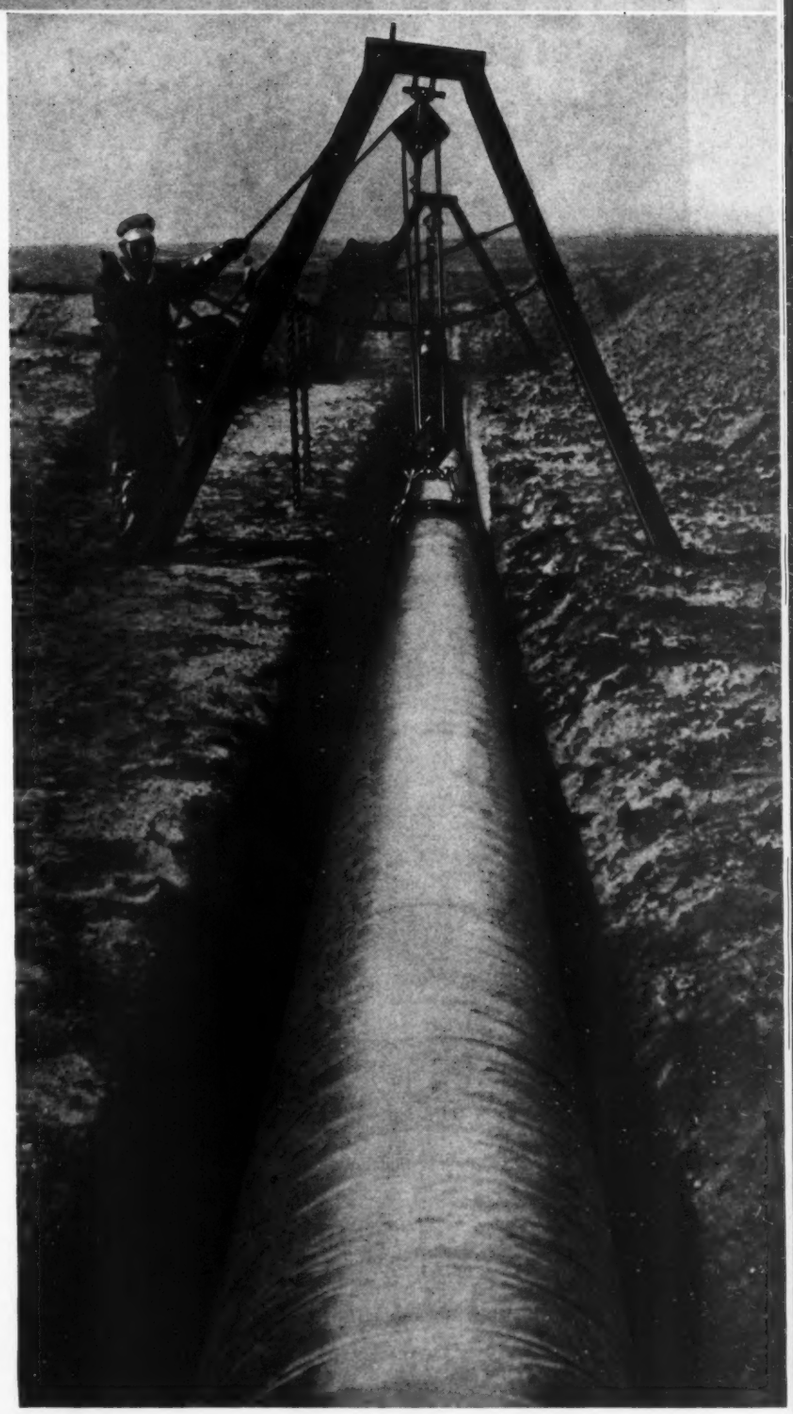
NEW YORK	PITTSBURGH	BALTIMORE	NEW ORLEANS	SEATTLE
DETROIT	CLEVELAND	ST. LOUIS	SAN FRANCISCO	TULSA
	PHILADELPHIA	HOUSTON	LOS ANGELES	

Why the trend toward SEAMLESS LINE PIPE?

because

NATIONAL SEAMLESS

1. Offers greater all-round reliability
2. Has high tensile strength
3. Is exceptionally uniform
4. Has unusual ductility
5. Is adaptable to any type of joint
6. Has no welds — no long line of possible weakness



THESE are the reasons why pipe line operators and engineers are growing more and more partial to *seamless* pipe — and specifying National Seamless Line Pipe — for gas, oil, and gasoline lines.

Technical experts agree that the seamless process produces line pipe superior to that made by any other method. A section of National Seamless Pipe is a balanced, homogeneous unit, pierced and rolled from a solid billet of steel, with no longitudinal line of potential weakness. Since only the finest open-hearth steels are used, its integrity is of the highest — you get pipe of uniform wall strength throughout.

In many of America's most important lines, you'll find National Seamless Line Pipe consistently giving satisfactory service under a wide variety of conditions. In every consideration, it has proved thoroughly reliable.

Whenever you have a problem concerning line pipe, consult our research and field service staffs. Their recommendations are based on the best standards of up-to-date line pipe practice.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

KOPPERS

IN THE OIL FIELD

AMERICAN HAMMERED PISTON RINGS

USED BY AMERICA'S LEADING ENGINE BUILDERS

EVERY SIZE

EVERY TYPE

FOR EVERY PURPOSE

In this impressive Gasoline Plant installation, the XVG Gas-Engine-Driven Compressors (Built by Ingersoll-Rand) are equipped with American Hammered Step Seal Rings and American Hammered Scraper Drain Oil Rings.

American Hammered Step-Seal Ring combines the sealing qualities of the multiple-piece ring with the strength of the one-piece type. American Hammered Scraper-Drain Oil Ring rides over the oil on the cylinder wall on the up stroke, scrapes the oil into grooves on the down stroke. This ideal combination gives maximum power utilization, with minimum cylinder wear.

Ingersoll-Rand is another of the larger manufacturers of compressors that have used American Hammered Piston Rings as standard equipment for many years.

KOPPERS COMPANY
AMERICAN HAMMERED PISTON RING DIVISION
BALTIMORE, MARYLAND

Koppers Principal Products for the Oil and Gas Field

American Hammered Piston Rings . . . Fast's Self-aligning Couplings . . . Phenolate Hydrogen Sulfide Recovery Systems . . . Tanks . . . Platework . . . Special Machinery . . . Valves . . . Roofing . . . Waterproofing . . . Treated Piling, Posts, Lumber, Poles . . . Cresosote Oil . . . Benzol . . . 90% Benzol . . . Tar Acids . . . Cresylic Acid . . . Iron Castings . . . D-H-S Bronze Castings . . . Time Cycle Controls . . . WESTERN Fire Hydrants . . . Gas Scrubbers . . . Pipe . . . Welding

FAST'S *Self-Aligning* COUPLINGS

FROM FIELD TO REFINERY

On drilling rigs, in pumping stations, in refineries—in every division of the oil industry—Fast's Self-aligning Couplings keep production going.

Engineers specify Fast's Couplings, leading manufacturers install them . . . for they know that only the best couplings are economical. Dollars saved on a coupling that doesn't stand up may cost *many thousands* in delays.

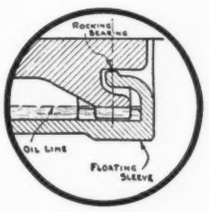
The bearing surfaces of Fast's Couplings are protected against wear by a positive film of oil. This oil is kept permanently clean by the rocking bearings' metal-to-metal seals, which are dust and moisture proof. No perishable materials, springs, grids, etc. are used.

Prevent operating troubles the economical way . . . when you purchase machinery, specify "Fast's" Couplings.

KOPPERS COMPANY
BARTLETT HAYWARD DIVISION
BALTIMORE, MARYLAND

Fast's Couplings Keep Production Going!

This cross section of a Fast's Coupling shows the precise metal to metal contact which forms a permanent dust and moisture proof seal. An exclusive feature in Fast's Self-aligning Couplings.



The illustration at left shows Fast's Couplings construction

(*Below*) Pumps and Gears—Phillips Petroleum Independence Pipe Line Station, Oklahoma City, Okla.

Koppers Divisions, Subsidiaries and Affiliates Serving the Oil and Gas Field

AMERICAN HAMMERED PISTON RING DIVISION - - BALTIMORE, MD.

BARTLETT HAYWARD DIVISION BALTIMORE, MD.

ENGINEERING AND CONSTRUCTION DIVISION - - PITTSBURGH, PA.

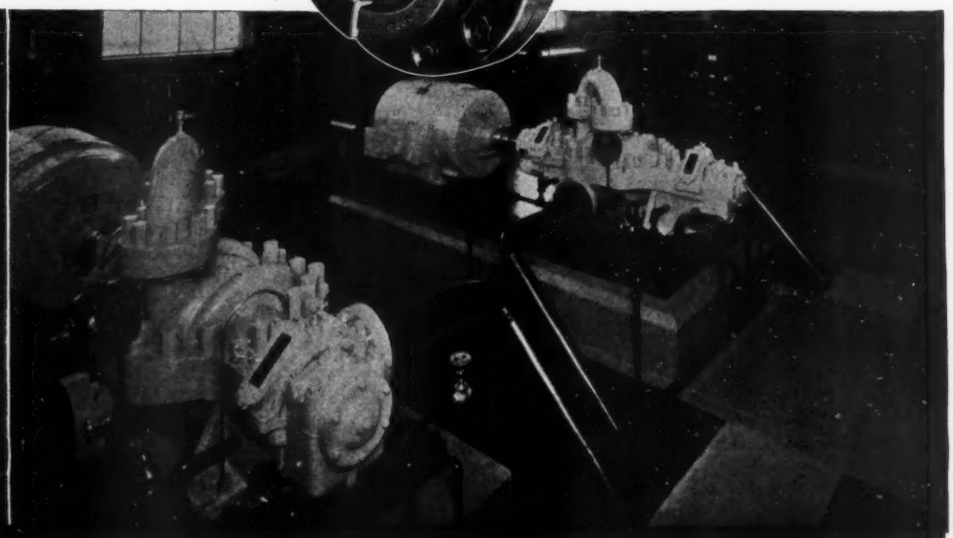
WESTERN GAS DIVISION FORT WAYNE, IND.

TAR AND CHEMICAL DIVISION PITTSBURGH, PA.

THE WHITE TAR COMPANY OF NEW JERSEY, INC. - KEARNY, N. J.

THE WOOD PRESERVING CORPORATION PITTSBURGH, PA.

NATIONAL LUMBER & CREOSOTING COMPANY - TEXARKANA, ARK.-TEX.

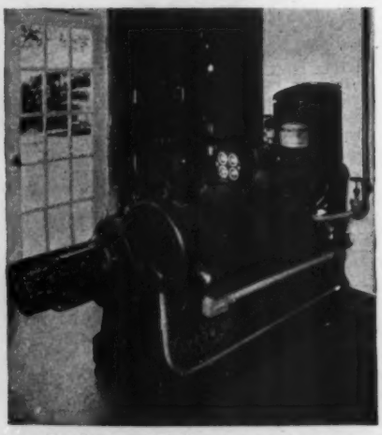


KOPPERS

DESIGNERS · BUILDERS · PRODUCERS · MANUFACTURERS · DISTRIBUTORS · OPERATORS

LYCOMING
NATURAL GAS ENGINES

FOR PIPE LINE POWER AND LIGHT



For Gas transmission stations, from the smallest to the largest, a LYCOMING GAS-ELECTRIC plant will serve exacting needs for auxiliary motor power and plant lighting.

"LYCOMING" has meant dependable power for nearly a third of a century—in many countries—in many fields. For auxiliary power and lighting in Gas Pipe Line Compressor Stations LYCOMING GAS-ELECTRIC units offer flexibility, reliability and economy not present in other types of units. Patented Zero-Lash Hydraulic self adjusting tappets eliminate tappet adjustments. Silchrome inserted exhaust valve seats—Water-cooled exhaust manifold—built-in gear driven governor, with no external linkage—packless water pump—water and oil safety devices—elimination of all tubing in lubrication and engine cooling systems—these are all standard equipment on LYCOMING units which reduce attendance and maintenance to a minimum. All generator units are self-contained on cushion suspended bed-plate that may be placed on any level floor capable of carrying the dead weight. COSTLY FOUNDATIONS ARE NOT REQUIRED.

"LYCOMING" GAS-ELECTRIC units are available in 10-20-30 KW single units and 25-35-40-50-60 KW in dual engine units.

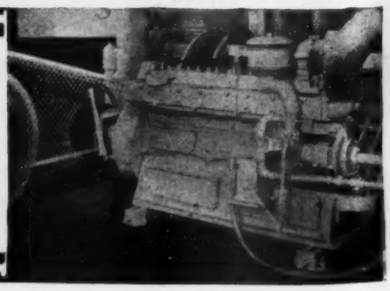
Write for new booklet on "AG" series for Pipe Line Power and Light giving complete information, description and specifications.

LYCOMING MANUFACTURING COMPANY

Los Angeles Office and Warehouse: 3443 Wilshire Blvd., Phone Fitzroy 3122-3 • Field Store and Service: Bakersfield
Moorlane Co. Office and Warehouse: 409-11 East Archer St., Tulsa — 565 First National Bank Bldg., Oklahoma City
Dallas Office and Warehouse: 3600 Commerce St. • Home Office, Works and Foundries, Williamsport, Penn.

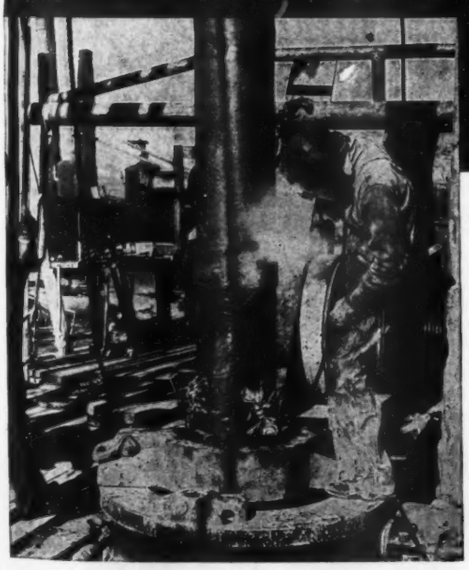
LYCOMING NATURAL GAS ENGINES FOR AUXILIARY POWER

LYCOMING "AG" power units are available from 20 to 50 HP for driving auxiliary compressors—for circulating water pumps for main compressors—to replace any electric motor with greater flexibility of service and better economy.



Give Me Armco "Spiral Welded" EVERY TIME

Plain end Armco pipe costs less to field weld than pipe with heavy ends.



Just five hours was needed here to set and cement 650 feet of 13", 3 gage Armco Casing.

NOW . . . ARMCO SURFACE CASING

Available in wall thicknesses from 11/64 to ¼ inch, Armco Surface Casing saves up to 37 per cent over other types. You can obtain it in standard casing sizes with economical slip joint couplings by calling the nearest store of our distributor: National Tank Company, Tulsa, Oklahoma, and Branches.

Check These Money-Saving Advantages: **Quickly available in small or large quantities; wide range in diameters and wall thicknesses; ample strength plus ductility; simplified construction; smooth interior; exact 40-foot lengths; low field welding cost; adaptable to special fabrication; choice of base metals, primers and protective coatings.**

• Users of Armco "SPIRAL WELDED" say it's the most adaptable pipe on the market for *gas gathering lines and short transmission lines.*

Why do they all like it? That's easily answered . . . Because Armco pipe comes in a wide range of diameters and wall thicknesses, you can select a product *exactly fitted to your requirements.* This way you save on material costs. Then, too, since Armco pipe is free of excess weight, it costs you less for unloading, hauling, stringing and field welding. Long standard stock lengths mean fewer joints.

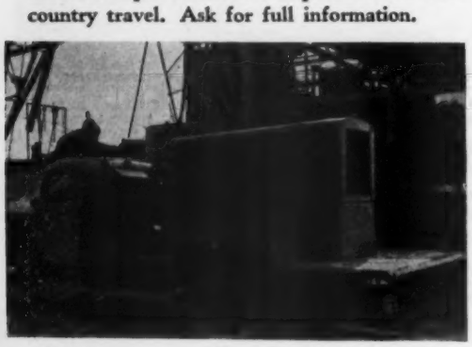
Topping off these advantages, Armco "SPIRAL WELDED" is *more efficient in service* because it combines ample strength and ductility with a smooth interior. Try it on that next job. Diameters range from 6 to 36 inches; wall thicknesses from 7/64 to ½ inch. The American Rolling Mill Co., Pipe Sales Division, Middletown, O.; 538 Mayo Building, Tulsa, Okla.

ARMCO SPIRAL WELDED PIPE

SLUSH PITS *while you wait!*

P&H BANTAM WEIGHT
EVERYWHERE IN THE OIL FIELDS

You'll admire the business-like way in which these Bantam-Weights go about their work. They're at home in the oil fields . . . built of tough alloy steels—all-welded, with the strength and speed to stand up and deliver in a he-man's country, and ask mighty little in return. The husky Ford V-8 motor delivers all the power you'll ever need—at the lowest operating and maintenance cost ever known for a unit of this kind. . . The Bantam-Weight's ready for anything—digging slush pits and basements—loading pipe or laying pipe—pile-driving or back-filling. It's fully convertible for all types of service including shovel and trench hoe. Attachments are so simple you can change from one type of service to another right in the field. Can be mounted on truck chassis or on its own tractor type crawlers. Special trailer unit permits fast cross-country travel. Ask for full information.



P&H

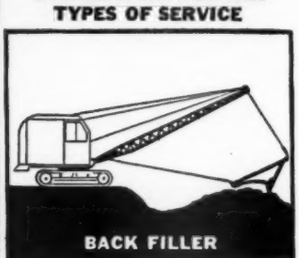
SMOOTHARC WELDERS

On pipe lines, around oil derricks, repairing field equipment, wherever metal is fabricated or repaired, P&H-Hansen Smootharc Welders are doing a full-time job. Available in all sizes and types from 75 to 600 ampere capacity with simple, single-current control which reduces the chance of weld failures. The famous Hansen generator automatically regulates open circuit and arc voltage to produce a steady, smooth arc that means faster, easier depositing of weld metal.

The complete line is described in Bulletin W-10. Write for your copy. Address Harnischfeger Corp., 4527 W. National Ave., Milwaukee, Wis.

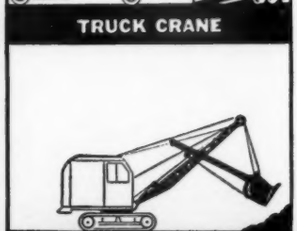
Warehouses and Service Stations: Dallas — Los Angeles San Francisco — Hoboken — Memphis — Jacksonville — Seattle

CONVERTIBLE FOR ALL TYPES OF SERVICE



BACK FILLER

TRUCK CRANE



SHOVEL

HARNISCHFEGER
CORPORATION

EXCAVATORS ★ ELECTRIC CRANES ★ ARC WELDERS P&H HOISTS ★ WELDING ELECTRODES ★ MOTORS

Saving Fuel Dollars.. with Carey HEAT-INSULATIONS

The new Propane and Butane Unit of the Skelly Oil Company's plant, Eldorado, Kansas, is typical of the high efficiency achieved in the petroleum industry with the assistance of the scientific application of Carey Heat Insulations.

For over a half century, Carey has produced Heat Insulations for every service requirement—from sub-zero to 2500° F.

. . . . .

Insulations for Stills, Water Tube Boilers, Stack Linings, Feed Water Heaters, Breechings, Ducts, Turbines, Absorbers, Pre-Heaters, Evaporators, Cooling Towers, Compressors, Towers, Drums, Condensors, Heat Exchangers.

Whatever your problem, you may be sure that Carey Insulations and experience will help to effect maximum economies.

THE PHILIP CAREY COMPANY

Dependable Products Since 1873

LOCKLAND, CINCINNATI, OHIO

BRANCHES IN PRINCIPAL CITIES

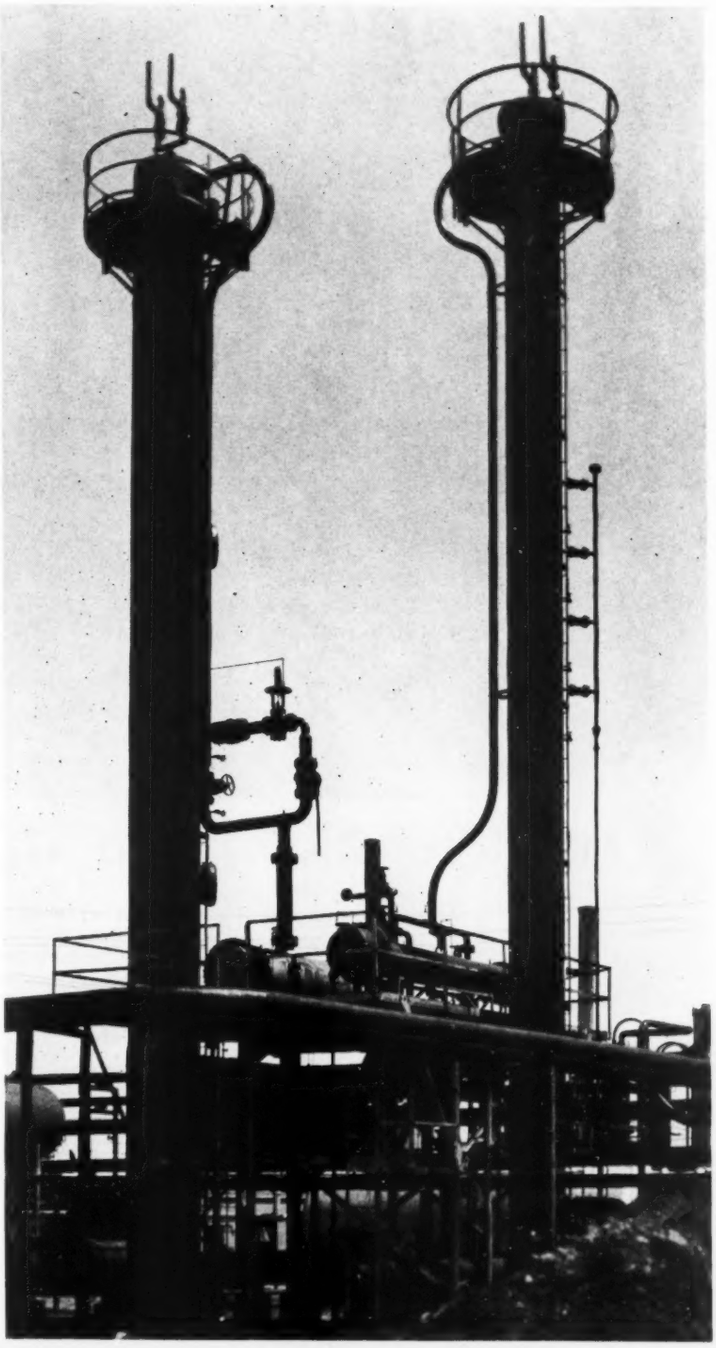
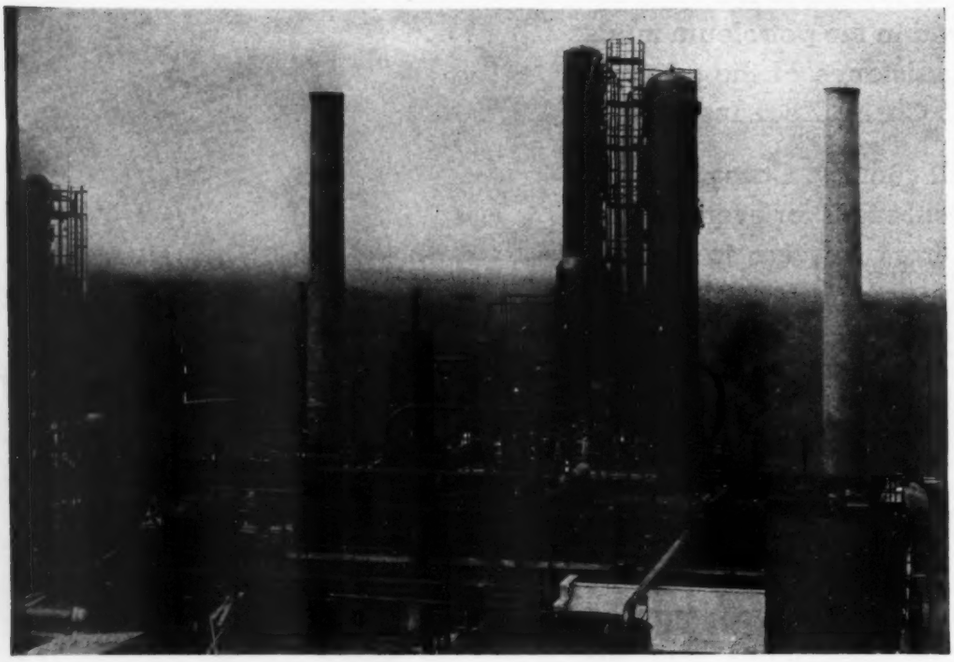


Illustration shows the new Propane and Butane Unit of the Skelly Oil Company's plant, Eldorado, Kansas. The two towers are insulated with Carey 1½" Curved 85% Magnesia Blocks, finished with ½" Carey 606 Super Plastic Monolithic . . . weather-proofed with a trowel coat of Thermotex Emulsion Weatherproofing. These insulations supplied by Kelley Asbestos Products Company, Kansas City. Installation was made in June, 1937.

Write for Insulation Handbook—address Dept. 34.

Carey Magnesia-Asbestos HEAT INSULATIONS

Complete Refineries . . . by LUMMUS



LUMMUS COMBINATION SELECTIVE CRACKING UNIT

With a background of more than forty years' experience in the design, construction and operation of petroleum refineries and chemical plants . . . with every facility for engineering and construction work, abroad as well as in the United States, Lummus is equipped to design and build petroleum refineries of all types:

CRACKING PLANTS
Single and Combination Units
Visbreaking, Reforming, Selective Gas Oil

LUBRICATING OIL UNITS
Solvent Refining, Solvent Dewaxing
Clay Treatment, Vacuum Rerunning
Coubrough Distillation

CRUDE DISTILLATION PLANTS
Atmospheric and Vacuum

LIGHT ENDS RECOVERY PLANTS
Stabilization, Debutinization, Absorption
Production Propane and Butane

Polymerization — Asphalt Production — Wax Production
Oil Heaters for all services

•

Lummus is always interested to discuss specific problems and to co-operate in the development of new processes and the design of special equipment.

LUMMUS

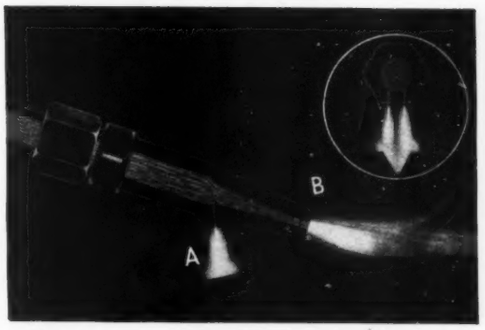
THE LUMMUS COMPANY
420 LEXINGTON AVENUE, N. Y.
BUSH HOUSE
ALDWYCH, LONDON, W. C. 2

PETROLEUM REFINING EQUIPMENT

Joints as dependable as the pipe *made with Multi-Flame Lindewelding*

PIPE-LINE connections can be made as dependable as the pipe itself by Multi-Flame Lindewelding. This method of joining pipe makes connections that are unusually ductile and at the same time are as strong and corrosion-resistant as the pipe base metal. Multi-Flame Lindewelding is fast and economical and does not alter the smooth, streamlined interior or exterior of the pipe.

The Linde organization can assist your engineers with its wide knowledge and experience in planning and organizing pipe-line projects. Ask the nearest Linde office for your copy of the helpful booklet "Lindewelding Pipe Lines." The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.



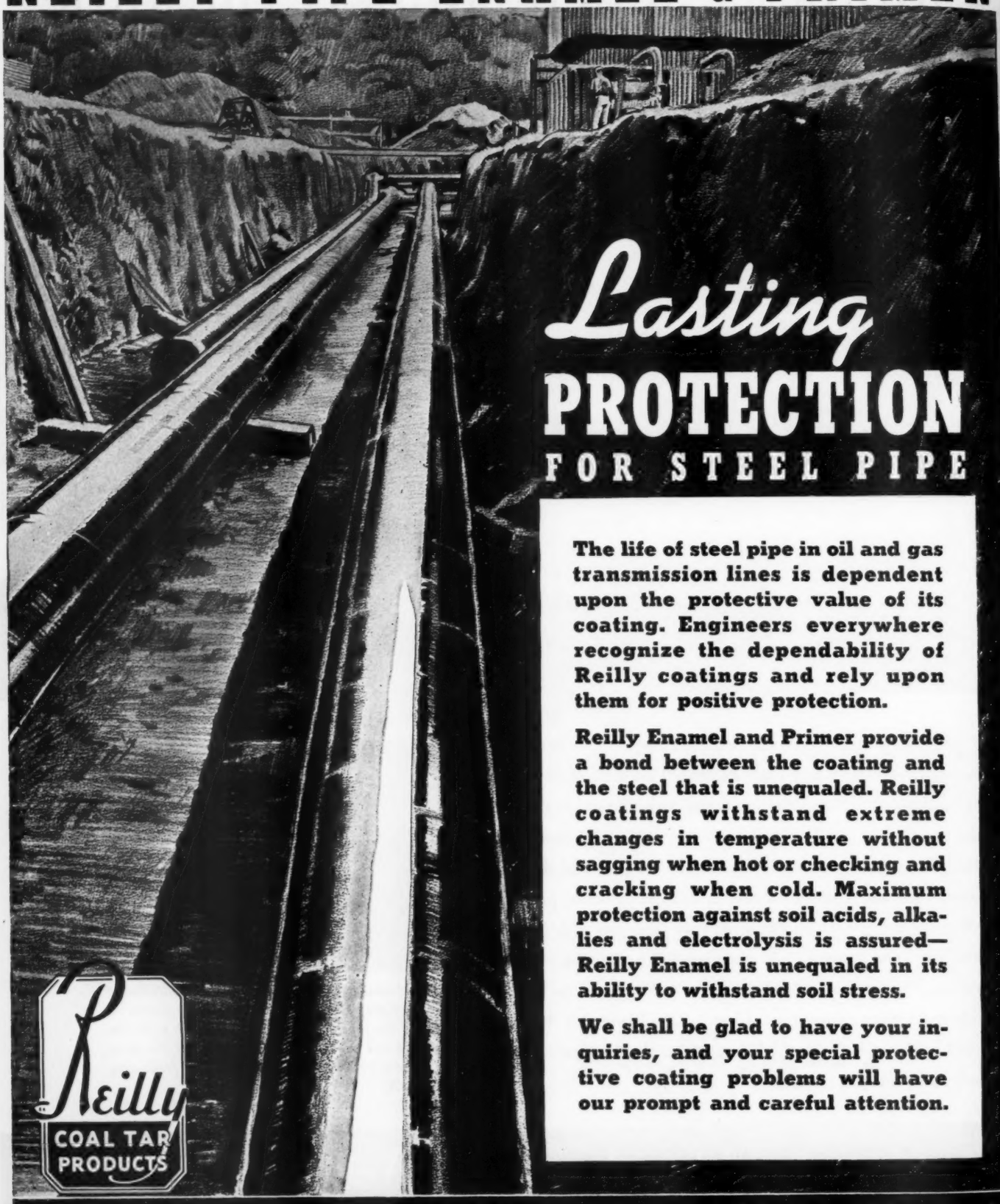
This schematic cross section shows the Multi-Flame Lindewelding Head in action. The small flames, A, preheat the pipe while the main flame, B, melts the welding rod and postheats the weld. In the circle is a cross-sectional view through the preheating flames, A.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM LINDE UNION CARBIDE

PRODUCTS OF UNITS OF UCC UNION CARBIDE AND CARBON CORPORATION

REILLY PIPE ENAMEL & PRIMER



Lasting PROTECTION FOR STEEL PIPE

The life of steel pipe in oil and gas transmission lines is dependent upon the protective value of its coating. Engineers everywhere recognize the dependability of Reilly coatings and rely upon them for positive protection.

Reilly Enamel and Primer provide a bond between the coating and the steel that is unequaled. Reilly coatings withstand extreme changes in temperature without sagging when hot or checking and cracking when cold. Maximum protection against soil acids, alkalies and electrolysis is assured—Reilly Enamel is unequaled in its ability to withstand soil stress.

We shall be glad to have your inquiries, and your special protective coating problems will have our prompt and careful attention.

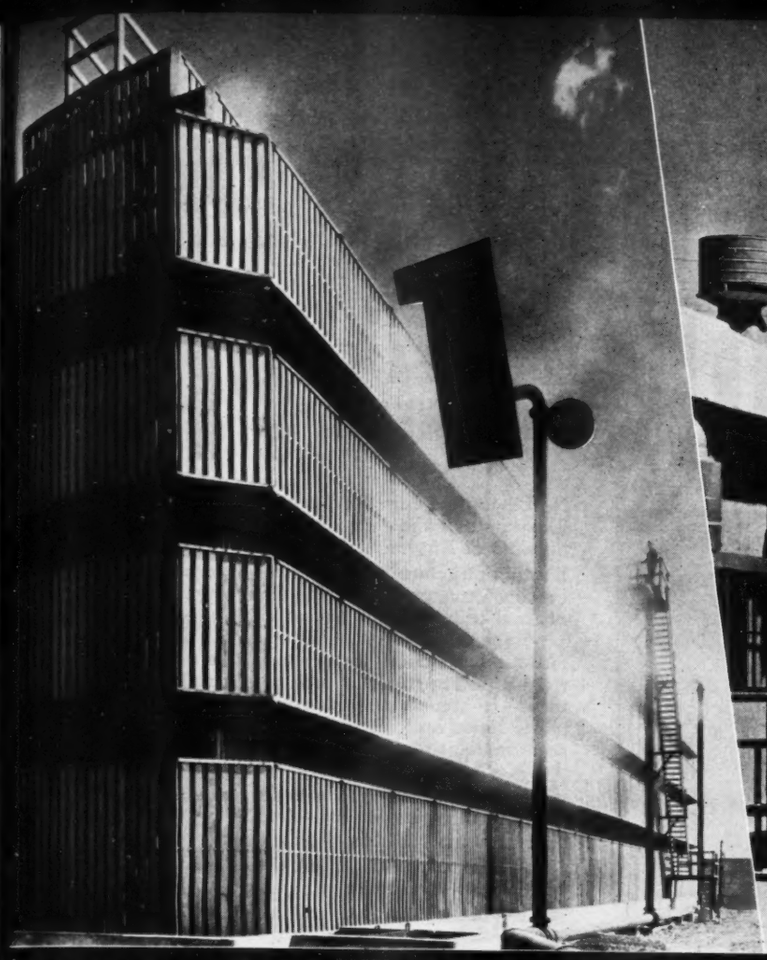
Reilly
COAL TAR PRODUCTS

REILLY TAR & CHEMICAL CORPORATION

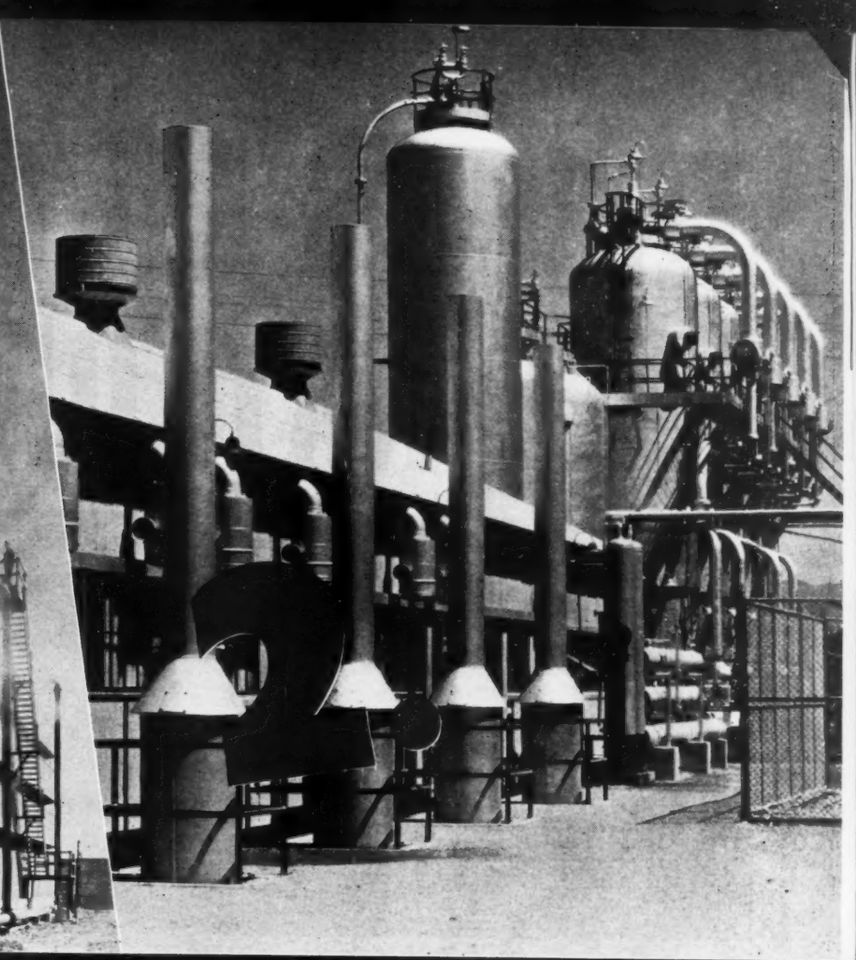
Executive Offices: Merchants Bank Building, Indianapolis, Indiana

2513 S. DAMEN AVENUE, CHICAGO, ILLINOIS 500 FIFTH AVENUE, NEW YORK, N. Y. ST. LOUIS PARK, MINNEAPOLIS, MINN.

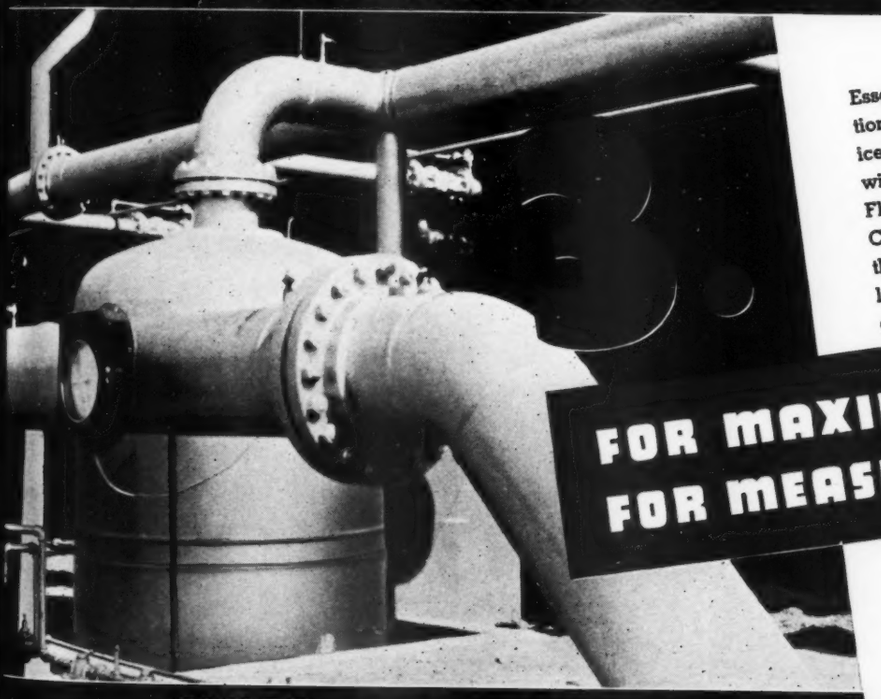
FIFTEEN PLANTS TO SERVE YOU



FLUOR AREATOR TYPE COOLING TOWERS



FLUOR AIR-COOLED MUFFLERS



FLUOR GAS CLEANERS

Essential requirements of many production, manufacturing and distribution services in the industry are met in 1-2-3 fashion with Fluor Aerator Type Cooling Towers, Fluor Air-Cooled Mufflers and Fluor Gas Cleaners. The world-wide acceptance of these products is due primarily to the following important features. Consider them carefully.

FOR MAXIMUM EFFICIENCY FOR MEASURABLE ECONOMY

1. Fluor Aerator Type Cooling Towers—eliminate wind blown spray; require least amount of water for make-up; give maximum and uniform cooling; utilize a minimum of ground space.
2. Fluor Air-Cooled Mufflers—eliminate expenditures for water as a cooling agent; insure cooler stack, room and floor temperatures; are quieter in operation; permit development of maximum engine horsepower; are available for all types of engines.
3. Fluor Gas Cleaners—remove over 99% of moisture from the gas stream; no moving parts; simple, fool-proof construction; quickly serviced; minimum resistance to passage of gas.

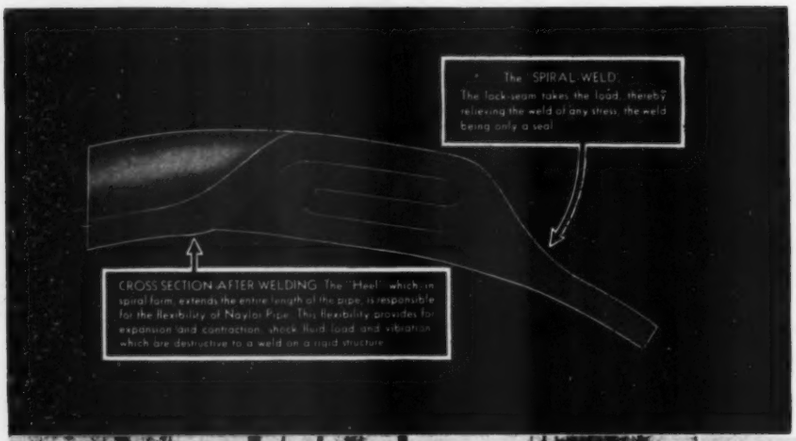
Briefly, increased efficiencies and measurable operating economies result from the use of these Fluor products.

Illustrated Bulletins containing valuable engineering data are available upon request.

The FLUOR CORPORATION, Ltd.

Main Office: Box 128, Station K, Los Angeles, Calif. • 990 McCormick Building, Chicago, Illinois • 703 Fairfax Building, Kansas City, Missouri • 934 M & M Building, Houston, Texas • 710 Canadian Pacific Building, New York City, N. Y. • 719 McBirney Building, Tulsa, Oklahoma

THERE'S NO OTHER PIPE LIKE NAYLOR LOCKSEAM SPIRALWELD PIPE


The "SPIRAL WELD"
The lock-seam takes the load, thereby relieving the weld of any stress, the weld being only a seal
CROSS SECTION AFTER WELDING The "Heel" which in spiral form, extends the entire length of the pipe, is responsible for the flexibility of Naylor Pipe. This flexibility provides for expansion and contraction, shock fluid load and vibration which are destructive to a weld on a rigid structure

No other pipe has the Lockseam Spiralweld Structure illustrated at the left. That's why no other offers the benefits of Naylor Pipe.

It's this Structure that produces light weight pipe with greater structural strength than any other pipe built of steel or iron of the same nominal wall thickness. It provides unrivaled flexibility so that Naylor Pipe conforms more closely to topographical conditions than a rigid pipe structure. It produces a unique Safety Feature — a continuous expansion joint which absorbs shock loads and vibration and cushions expansion and contraction stresses and strains uniformly.

Another benefit — Naylor Pipe is absolutely round with accurate diameter and standard weight ends that always match correctly — simplifying assembly and insuring a better field-welding job.

Summing it up, Naylor provides "PLUS" performance at cheaper installed cost.

For details and prices, call us or our distributors.

MID-CONTINENT SUPPLY COMPANY
FORT WORTH, TEXAS, AND BRANCHES
EXCLUSIVE DISTRIBUTORS In Arkansas, Kansas, Louisiana, New Mexico, Oklahoma and Texas

NAYLOR PIPE COMPANY • CHICAGO, ILLINOIS

STEARNS-ROGER

Established in 1885

The WHY of REPEAT ORDERS readily answered in VERSATILITY and RELIABILITY

We now have the following construction projects in progress in the Oil and Gas Industry:

	CUSTOMER	*LOCATION*	
1.	Continental Oil Co.	Lance Creek, Wyo.	Enlargement of Absorption Gasoline Plant, built by us in 1936. Turnkey basis.
2.	Continental Oil Co.	Tepetate, La.	Addition to Pressure Maintenance Plant, built by us early this year. Compressors discharge at 3700-4600 lb. High pressure facilities tested hydrostatically to 7000 lb.
3.	El Paso Natural Gas Co.	Jal, N. M.	Gas Dehydration Plant to handle 100,000,000 cu. ft. per day at 550 lb. Turnkey basis.
4.	Kansas Pipe Line & Gas Co.	Otis, Kan.	Gas Dehydration Plant to operate at 750 lb. Turnkey basis.
5.	The Montana Power Co.	Butte, Mont.	Butane Standby Plant serving City of Butte. Plant will be automatic and in case of main gas line trouble, will within five minutes start putting 1,000,000 cu. ft. per hour of proper butane air mixture into city distribution system. Butane supply will consist of 250,000 gallons of liquid butane storage. Turnkey basis.
6.	Northern Utilities Co.	Sand Draw, Wyo.	Addition to Absorption Gasoline Plant. 425 lbs. Operating Pressure, built by us in 1929. Turnkey basis.
7.	Ohio Oil Co.	Lovell, Wyo.	Refinery, capacity 2500 bbls. per day.
8.	Panhandle Eastern Pipe Line Co.	Haven, Kan.	Compressor Station addition, 3900 HP.
9.	Panhandle Eastern Pipe Line Co.	Greensburg, Kan.	Compressor Station addition, 3900 HP.
10.	Panhandle Eastern Pipe Line Co.	Liberal, Kan.	Compressor Station addition, 3000 HP.
11.	Panhandle Eastern Pipe Line Co.	Liberal, Kan.	Addition to Absorption Gasoline Plant built by us in 1936, increasing plant capacity from 130MM cu. ft. per day to 200MM cu. ft. per day, operating pressure 450-500 lb. Turnkey basis.
12.	Panhandle Eastern Pipe Line Co.	Liberal, Kan.	Addition to Gas Dehydration Plant built by us in 1936, increasing capacity from 130MM cu. ft. per day to 200MM cu. ft. per day at 450-500 lb. operating pressure. Turnkey basis.

All of the above contracts, except two, are "Repeat Orders" from customers for whom we have done work before.

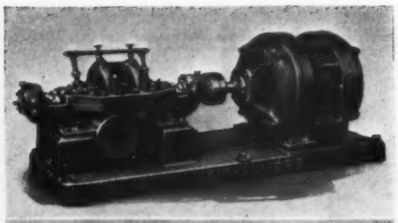
Our latest Gas Dehydration Plant, when completed, will be our eighth plant of this type to be installed on main gas transmission lines. The first installation in the industry was installed by us for the Montana Power Company at Cut Bank, Montana, in 1934.

Our facilities are complete for design, fabrication, and erection. The above list illustrates the unusual versatility of our organization.

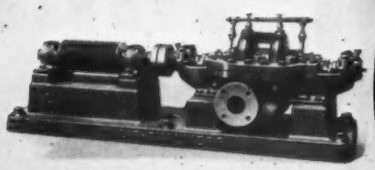
THE STEARNS-ROGER MFG. CO.

ENGINEERS CONTRACTORS — DENVER, COLO. — DESIGNERS MANUFACTURERS

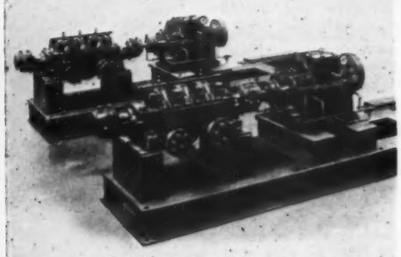
PARKHILL-WADE, INC., LOS ANGELES, CALIFORNIA, CONSULTING ENGINEERS



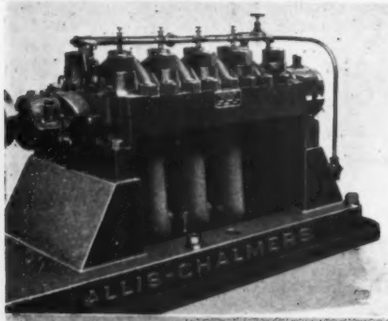
Standard Motor Driven Two-stage Pump



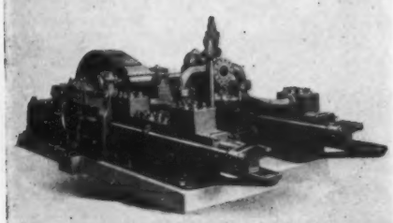
Pump Arranged for Texrope Drive from Slower Speed Engine



Two Pumps with Speed Increasing Gears for Engine Drive



6" x 5" Type M Pipe Line Pump.



Forged Steel Reciprocating Pipe Line Pump

In addition to the Pumps shown above, Allis-Chalmers also builds single-stage units with capacities from 30 to 50,000 gpm and close-coupled Motor-Pump units.

Pumps and Motors
for Pipe Line Service

PUMPS for main pipe lines, for gasoline or oil, for branch lines and for gathering service are built by Allis-Chalmers together with a complete line of motors for driving them.

The pump shown above is one of five 20,000-bbl. per day, 550-lb. pressure Type "M" centrifugal units with 300-hp, 1760-rpm Allis-Chalmers pipe-ventilated squirrel-cage motors installed in 1930. They have an excellent record, pumping crude oil through a main pipe line for five years.

The pumps shown at the left are suitable for branch lines and gathering service. They show three types of drive: direct connected motor, Texrope drive for connection to engine, and with speed increasing gears for direct connection to gasoline or Diesel engine.

The simplicity of the Type "M" pump is of particular advantage in pipe line pumping. Volute diffusion passages surrounding the impellers are the simplest and best method of securing high efficiency over a reasonably wide range. Double suction runners eliminate internal balancing devices. Air-cooled Kingsbury thrust bearings, in larger units, eliminate cooling water, oil pump, oil tank, and oil cooler.

Allis-Chalmers builds forged steel reciprocating pipe line pumps in capacities from 5,000 to 50,000 bbl. per day and pressures up to 1000 lbs. Many of these have been furnished with Allis-Chalmers Diesel engine drive.

As shown in the column at the right, Allis-Chalmers builds a line of motors suitable for every type of pump drive.

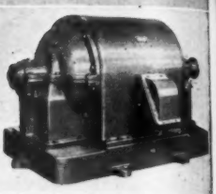
Write the nearest Allis-Chalmers District Office for further information on pipe line and other Oil Industry equipment.

ALLIS·CHALMERS

MILWAUKEE WISCONSIN

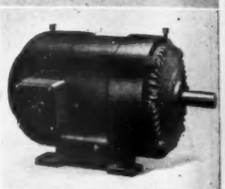
Gearmotors

Large Induction and Synchronous Motors

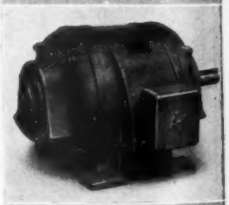


3600 rpm Base Ventilated Induction Motors

Squirrel Cage Induction Motors



Explosion-Proof Motors



Splash-Proof Motors

Texrope Drives

THROUGHOUT the oil fields you will see silver-colored Pittsburgh Seamless pipe and tubing in storage yards, on trucks and trains, on racks at rigs, and being run in the wells. Such popularity has not just happened. It is the result of more than thirty years of determined effort to provide oil producers with a better product, to meet every advance in drilling technique with corresponding improvements in pipe and tubing.

PITTSBURGH STEEL COMPANY

PITTSBURGH, PA.

New York Philadelphia Cleveland Detroit Chicago
Memphis Charlotte Tulsa Los Angeles Houston

Export Distributor: Lucey Export Corporation, New York, N. Y., U. S. A.

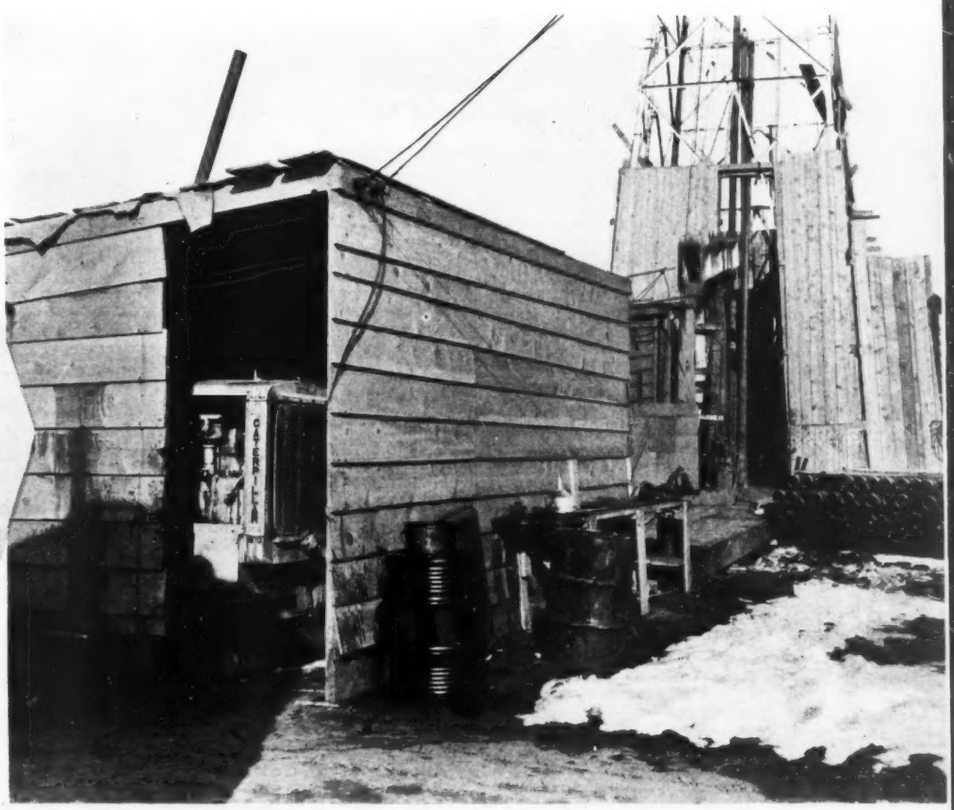
Different . . .

A cable tool rig at the Trapp Pool, Hays, Kansas. The D13000 engine ran 120 hours a week on this job, using only 45 gallons of Diesel fuel per day—making the power cost less than 14c an hour. Illustration shows engine bailing out, with walking beam ready to be hooked up for pumping. Owner—Murray Drilling Company.

BUT ALL JOBS LOOK ALIKE TO "CATERPILLAR" DIESEL

The state—Kansas. The set-ups—different. Yet in each case a 125-hp. "Caterpillar" Diesel Engine produced the one result it assures on any job—fast, steady drilling at *rock-bottom power costs*. What is true of drilling is also true of line pumping—or any other job to which "Caterpillar" Diesel Engines may be assigned: The big word they spell is E-C-O-N-O-M-Y. Have *you* a power problem? Are you interested in facts and figures? "Caterpillar" dealers have both—a-plenty. Or, write us direct.

SEVEN ENGINE SIZES—FROM 44 TO 160 HP.



A D13000 engine powers this cable tool rig through a friction-type clutch to the band wheel at Chase, Kansas. The owner, A. E. Merriam, says that he rarely touches the engine; that it runs cool—and that it has been "drilling rings around" a steam-powered rig operating on a nearby lease. He further reports that he is saving $1000 a well, as compared with what he used to spend for steam power. Fuel consumption is about 52 gallons a day; and total fuel-and-lubrication cost is about 12c an hour. After 5000 hours of running, maintenance costs amounted to only $12.

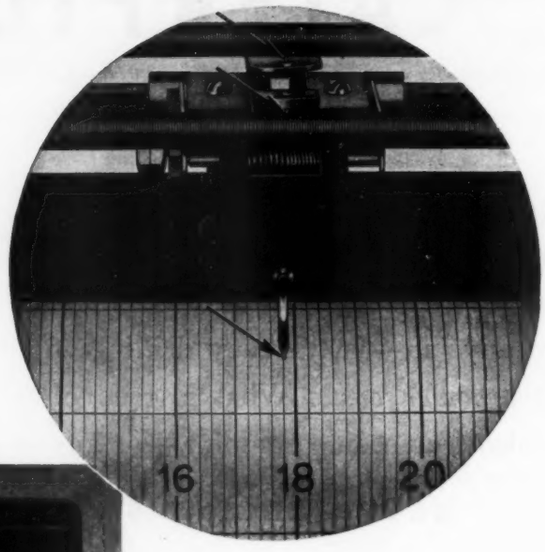
CATERPILLAR DIESEL ENGINES

REG. U.S. PAT. OFF.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS
WORLD'S LARGEST MANUFACTURER OF DIESEL ENGINES

NO LOST MOTION HERE

...measurement and record are always identical



The slide-wire contact and recording device are mounted in one unit . . . They move as a unit . . . No backlash of gear trains or slippage of pulley arrangements. There can be no lost motion in recording the measurement in a Foxboro Potentiometer Recorder.

Thus the immediate and accurate response to thermocouple temperature changes is transferred to the record with precision. The 12-inch wide chart makes readings easy. And the Foxboro extra compensating slide-wire guarantees more uniform balancing action and pen travel at every point on the chart. There's a type of record to fit each need—from a single line to 8 individual records.

Write for Bulletin 190-1. It lists all of the advantages of this up-to-date Potentiometer Pyrometer. The Foxboro Company, 60 Neponset Ave., Foxboro, Mass., U.S.A. . . . Branch offices in 25 Principal cities.

FOXBORO

REG. U. S. PAT. OFF.

PYROMETER RECORDERS

RESPONSE · ACCURACY

Increase your profits with J&L STEEL

Every fifth man in the J & L Seamless Tube Department is engaged in inspection to insure high quality. This work is done for you . . . based on your past experience and your present and future needs.

J&L Seamless Line Pipe helps you save money

. . . it lays quickly . . . gives leak-proof lines . . . has long life

J & L Seamless Line Pipe is quickly aligned and installed . . . welds readily to form tight, leak-proof joints . . . because it has constant, true dimensions . . . uniform wall thickness . . . and is made of high quality steel of the right composition and soundness for good welding. J & L exercises strict metallurgical control over every process of manufacture from iron ore to finished product, to make certain that every length of J&L Seamless gives you fast installation and long dependable service.

J & L Seamless Line Pipe gives better service and longer life. The seamless method of manufacture leaves no lines of weakness along the pipe. Furthermore, the uniform density of metal in J & L Seamless provides uniform, maximum resistance to corrosion . . . there are no porous sections for corrosion to take hold.

Thousands of miles of J&L Line Pipe are in use today giving owners completely satisfactory service. In a recent instance, a J & L Seamless line withstood, without a single leak, the terrific, damaging forces of flood waters and wash-out.

With J & L Seamless Line Pipe, lines lay faster . . . you get sound welded joints . . . and leak-proof lines at low cost. This means trouble-free transportation of oil, gas and gasoline . . . at a profit. Get the best for your line pipe requirements . . . specify J&L Seamless.

This J & L Oil Country Pipe handbook —OC-3—is filled with useful and interesting information and data on design, specifications and manufacturing methods. Write for your copy today.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

J&L PIPE

J&L SEAMLESS

DRILL PIPE · CASING · TUBING · LINE PIPE

NAPHTHAS · FUEL OILS · DIESEL FUELS

KEROSENE · GASOLINE · INDUSTRIAL

AUTOMOBILE LUBRICANTS

BRIGHT STOCKS

Nine strategically located **SHELL** *Refineries*

CALIFORNIA

COALINGA, DOMINGUEZ, MARTINEZ, WILMINGTON

GULF COAST

HOUSTON, TEXAS; NORCO, LA.

MID-CONTINENT

EAST CHICAGO, IND.; WOOD RIVER, ILL.; ARKANSAS CITY, KANSAS

Important POINTS TO LOOK FOR IN IRON BODY GATE VALVES

When you buy Iron Body Gates you can forestall much trouble and expense by insisting that they embody the following important features:

Sound tough castings that will safely withstand operating pressures and temperatures.

Uniform interchangeability of parts, so that any replacement or repair part will be exactly the same size as that which is to be renewed.

Disc of solid construction that will not distort under temperature variations.

Heavy renewable bronze seat rings with strong deep-cut threads to insure tight seating in the body without springing.

An *ample number of substantial lugs* on seat rings to facilitate renewal.

Bronze bushings between the bronze stem and iron parts of valve, to prevent corrodible contact and consequent scoring of stem and packing, which causes leaky stuffing boxes.

The disc so perfectly guided that it rides straight and true to its seat without chattering or dragging on seat rings, thus insuring tight closure and longer seat and disc life. To insure this perfect guiding, *both the grooves in the disc and the ribs in the body must be accurately machined.*

The sure way for you to obtain *all* these service-giving and money-saving features is to specify Lunkenheimer Iron Body Gate Valves. By their every-day efficient and satisfactory performance they effect substantial reductions in maintenance expense and valve costs.

"AMERICA'S BEST" SINCE 1862

Available through Lunkenheimer distributors in all industrial centers.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

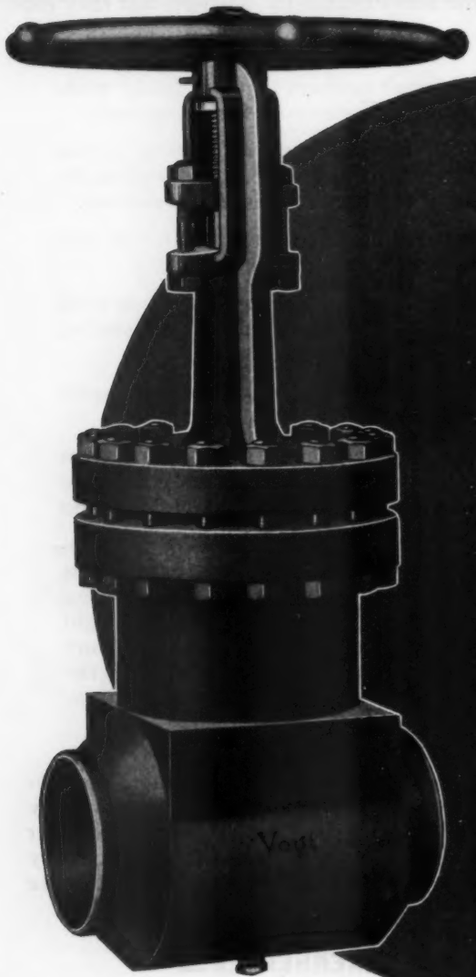
Buy QUALITY—*Buy* LUNKENHEIMER

6-75A-91

DROP FORGED STEEL

Gasoline Pipe Line Valves

by Vogt



Don't take chances! Use Vogt drop forged steel Valves for gasoline pipe line duty and be SURE of safe, dependable service year after year.

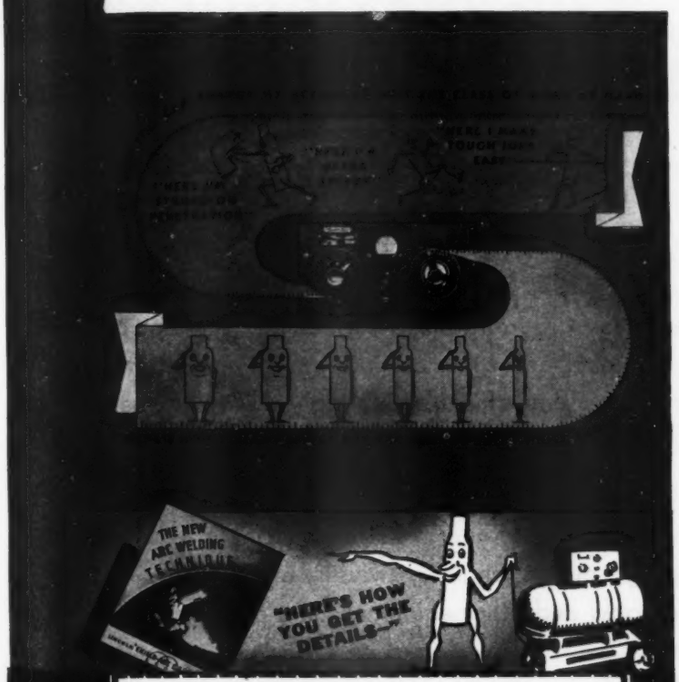
It is significant that the pioneers of this modern transportation method went to Vogt for Valves . . . . and repeat orders prove this confidence was not misplaced. Now, more than a thousand miles of gasoline lines are controlled by Vogt DROP FORGED STEEL Valves.

We illustrate an 8" valve, with welding ends, typical of those recently furnished for a 150 mile gasoline pipe line in the East.

HENRY VOGT MACHINE CO. Inc., LOUISVILLE, KY.

NEW YORK PHILADELPHIA CLEVELAND CHICAGO CINCINNATI KANSAS CITY DALLAS

"I FIND WELDING 5 TO 10 FEET PER HOUR FASTER WITH THE NEW 'SHIELD-ARC SAE



"During my life, I've worked in some husky gales—out on the firing line, on the derricks and up on the tall tanks. Never have I turned out so many dense feet of weld per hour under windy conditions as I do with the new Lincoln Welder. Here's why—

"With its Dual *Continuous* Control you can get an arc with lots af 'knee action'—a type of arc that's designed specifically for work in the wind. You can crowd it—or stretch it—it keeps going.

"With this new welder, you can get *any* TYPE of arc and *any* welding current to suit *every* job. This makes me a *specialist* instead of a *jack-of-all-trades.*

"As a result, I give you 15% to 20% faster welding which, on the average job, means as much as a 10-feet-per-hour bonus. Ask for proof.

"Yours for a wider use of welding and lower welding costs,

"FLEETWELD ROD"

—Spokesman for all progress-minded welding electrodes and emissary of

THE LINCOLN ELECTRIC COMPANY

Largest Manufacturers of Arc Welding Equipment in the World

THE LINCOLN ELECTRIC CO., Dept. N-421, Cleveland, Ohio

My welding application is_____

How can the "SAE" do it faster?

☐ Send a free copy of Bul. 412 giving details about the new "Shield-Arc SAE" welder. ☐ Send a free copy of Bul. 418 on Pipe Line Construction.

Name_____ Position_____

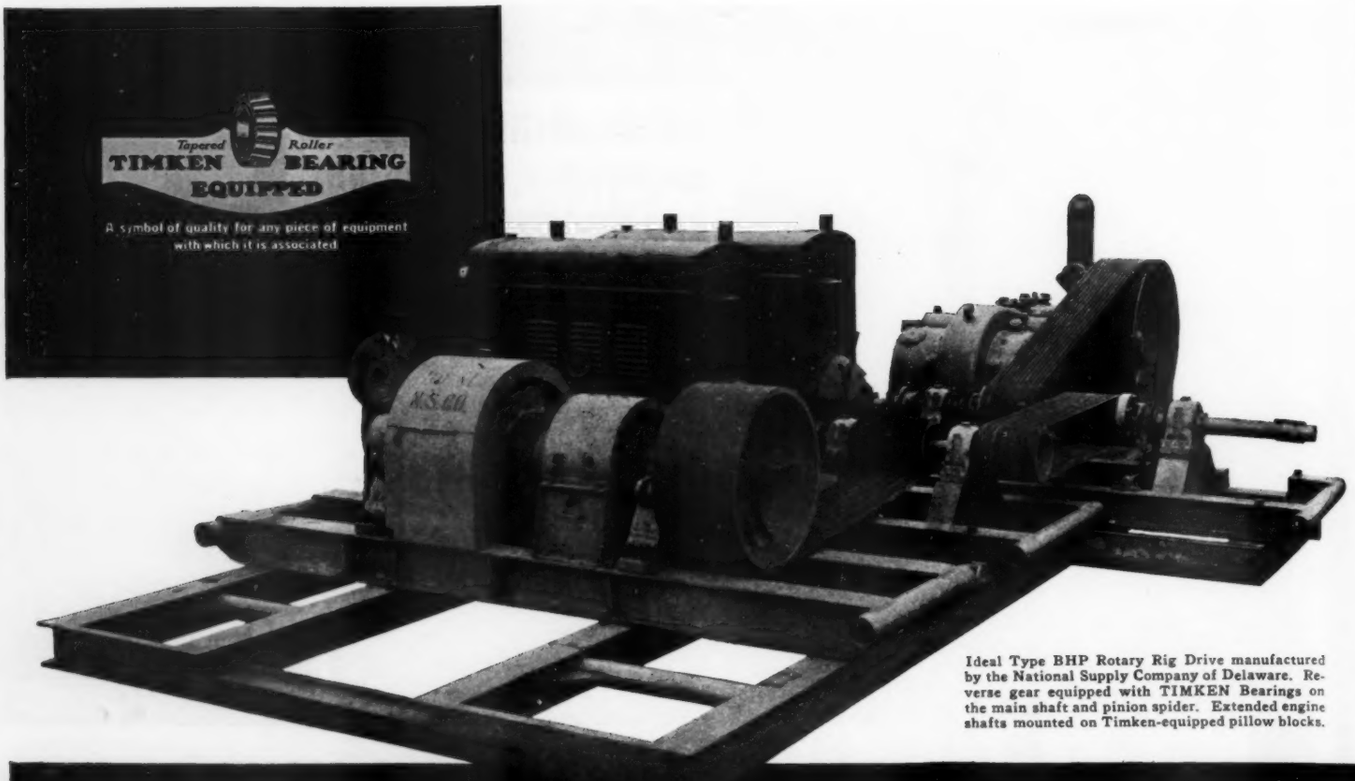
Company_____

Address_____

City_____ State_____

"SHIELD-ARC SAE"

THE WELDER WITH DUAL *CONTINUOUS* CONTROL



Ideal Type BHP Rotary Rig Drive manufactured by the National Supply Company of Delaware. Reverse gear equipped with TIMKEN Bearings on the main shaft and pinion spider. Extended engine shafts mounted on Timken-equipped pillow blocks.

A REAL TEST OF BEARING ENDURANCE

There is no more thorough nor severe test of anti-friction bearing efficiency and dependability than oil field service.

Every possible combination of speed and load conditions is encountered in the many different kinds of heavy-duty equipment used in drilling, pumping and other oil field operations and it takes a versatile bearing and one of extremely high quality to meet all of them.

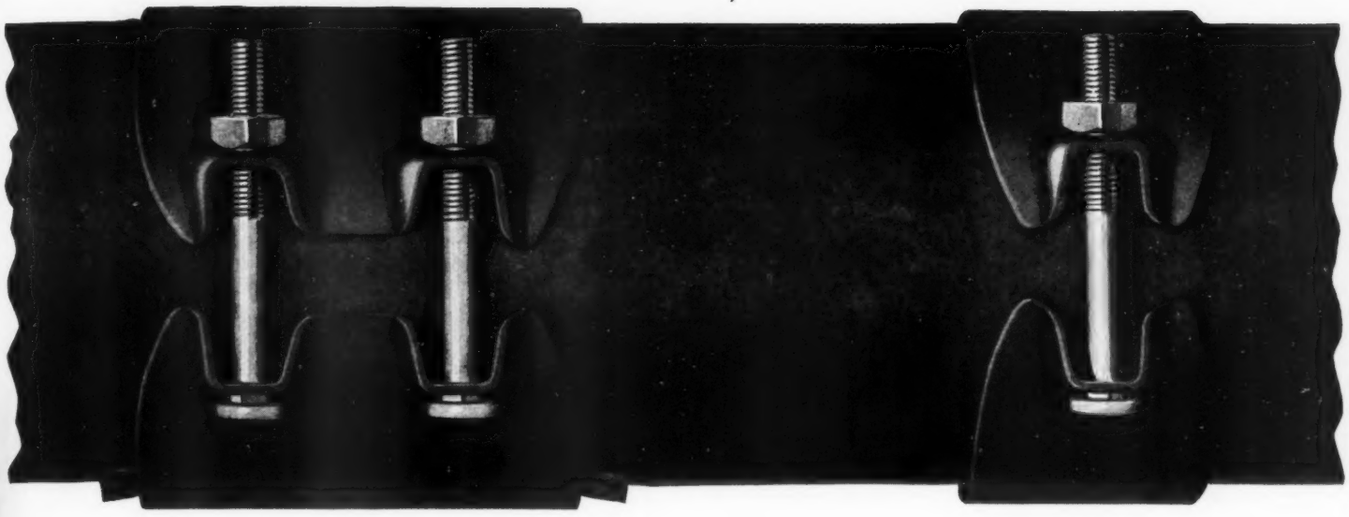
The consistent success of TIMKEN Tapered Roller Bearings in the oil fields over a long period of years has firmly established Timken-equipped drilling rigs, pumps, engines, swivels, compressors, crown blocks, traveling blocks and other equipment in a position of world-wide dominance.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; Timken Rock Bits; and Timken Fuel Injection Equipment.

TIMKEN
TAPERED ROLLER BEARINGS

A FACTORY PRECISION CLAMP AT LESS THAN HOMEMADE COST!!



Single bolt width—3½" wide—complete with rubber cone gasket. Two bolt width—6½" wide—with strip gasket.

★ **PRESSED STEEL ECONOMY CLAMPS** offer you amazing savings on the repair of badly pitted and corroded pipe lines . . . give you instant, permanent repair. Easily, quickly applied. Later, if desired, the half covering leak can be welded on as a patch.

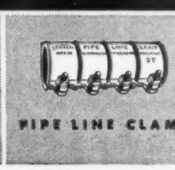
This is a tremendously strong clamp . . . heavy enough to outlast the pipe itself. Formed from 3/16ths thick, heavy, hot-pressed steel plate . . . with integral wedge-shaped lugs. Packed complete with rubber cone or strip gasket, and ⅝" cadmium plated steel bolts.

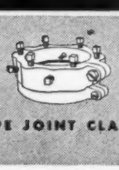
Available in two widths . . . 3½" and 6½". Many concerns use large quantities of this clamp . . . write for prices and progressive schedule of discounts.

COMPLETE SKINNER CATALOG ON REQUEST

M. B. SKINNER CO. *Est. 1898* SOUTH BEND, IND.

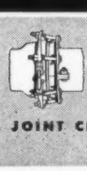
EMERGENCY PIPE CLAMP

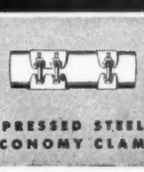

PIPE LINE CLAMP


PIPE JOINT CLAMP

COLLAR LEAK CLAMP

HIGH PRESSURE WELD CLAMP


BELL JOINT CLAMP


PRESSED STEEL ECONOMY CLAMP

CORROSION IS NO LONGER A PROBLEM WHEN YOU USE

READING STEEL VALVES

BUY ACCO QUALITY

A FEW OF THE 137 AMERICAN CHAIN & CABLE INDUSTRIAL PRODUCTS

AMERICAN CHAIN DIVISION
(DOMINION CHAIN COMPANY, Ltd., in Canada)
Weed Tire Chains • Welded and Weldless Chain • Malleable Castings • Railroad Specialties

AMERICAN CABLE DIVISION
Tru-Lay Preformed Wire Rope • Tru-Loc Processed Fittings • Crescent Brand Wire Rope Tru-Stop Brakes

ANDREW C. CAMPBELL DIVISION
Abrasive Cutting Machines • Floformers Special Machinery • Nibbling Machines

FORD CHAIN BLOCK DIVISION
Chain Hoists • Trolleys

HAZARD WIRE ROPE DIVISION
Green Strand Wire Rope • "Korodless" Wire Rope • Preformed Spring-Lay Wire Rope • Guard Rail Cable

HIGHLAND IRON & STEEL DIVISION
Wrought Iron Bars and Shapes

MANLEY MANUFACTURING DIVISION
Automotive Service Station Equipment

OWEN SILENT SPRING COMPANY, Inc.
Owen Cushion and Mattress Spring Centers

PAGE STEEL AND WIRE DIVISION
Page Fence • Wire and Rod Products Traffic Tape • Welding Wire

READING-PRATT & CADY DIVISION
Valves • Electric Steel Fittings

READING STEEL CASTING DIVISION
Electric Steel Castings, Rough or Machined

WRIGHT MANUFACTURING DIVISION
Chain Hoists • Electric Hoists and Cranes

● As the problems of corrosion increased in valve operation in refineries, Reading-Pratt & Cady engineers found the answers. New steels and alloys, new trim materials were tested and selected for Reading Steel Valves.

Today Reading-Pratt & Cady can furnish for refinery service valves made of carbon steel or chrome molybdenum steel. Trim may be stainless iron or 18 and 8 alloys. Thus, regardless of corrosive conditions or temperatures and pressures, there is a Reading Steel Valve to meet the requirements.

No engineer wants to compromise on valves for corrosive service . . . that's why so many now specify Reading-Pratt & Cady Valves. Next time you need steel valves—or any valves—specify Reading-Pratt & Cady.

READING-PRATT & CADY DIVISION
AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT, CONNECTICUT

In Business for Your Safety

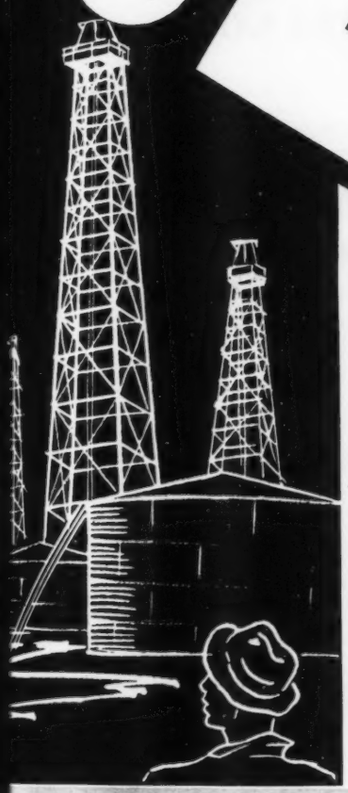
READING-PRATT & CADY VALVES

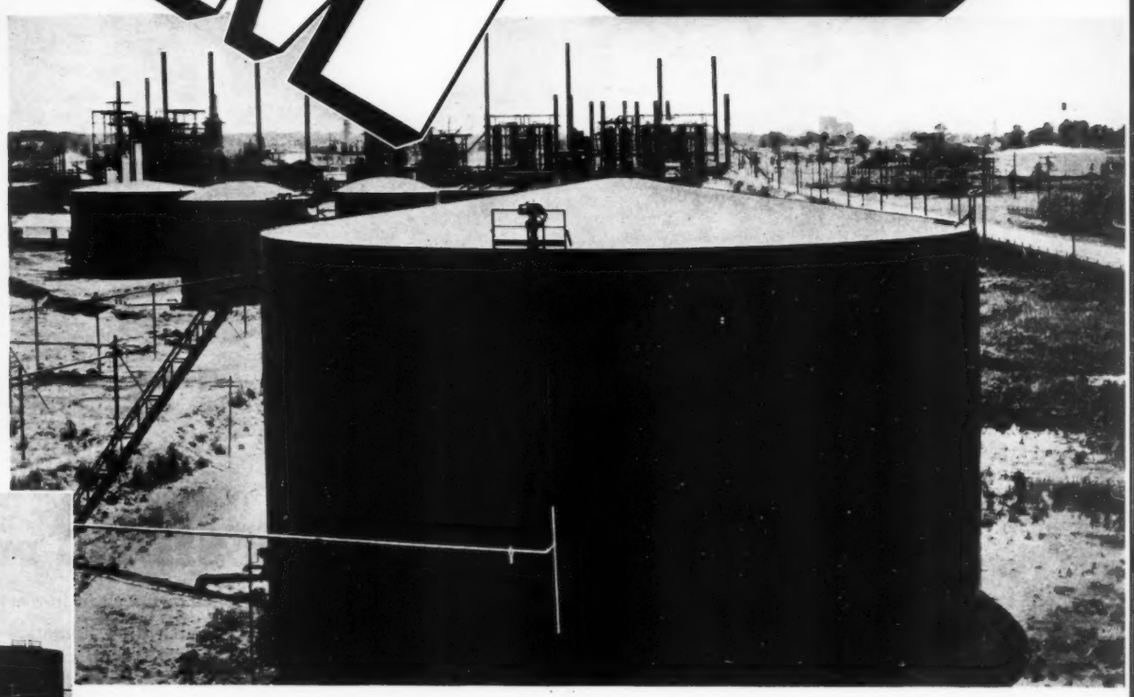
ACCO QUALITY VALVES • MADE IN A PLANT DEVOTED EXCLUSIVELY TO MANUFACTURING VALVES

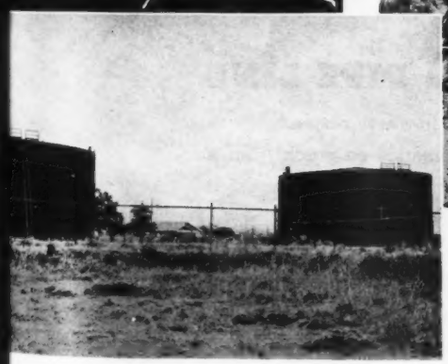
P·DM

a familiar sight in every active field

OIL STORAGE TANKS







Illustrations show a typical installation of 25,000 gal. P·DM Oil Storage Tanks. These were built for the Arkansas Fuel Oil Company at Bossier City, La.

(Photos by Ledoux)

Note that we say "P·DM"! The reason steel storage tanks by Pittsburgh-Des Moines are everywhere encountered by the oil country traveler is, of course, because they're *better* tanks—better designed, better fabricated and better erected.

The experience of the shrewdest buyers of oil storage tanks is complemented by P·DM's long years of experience *in building* better tanks. That's why smart buyers and P·DM so invariably get together!

• *Write for your copy of our latest Steel Storage Tank Bulletin. For any special information you may require on any type or size of welded or riveted tanks, call upon your nearest P·DM office.*

PITTSBURGH · DES MOINES STEEL CO.

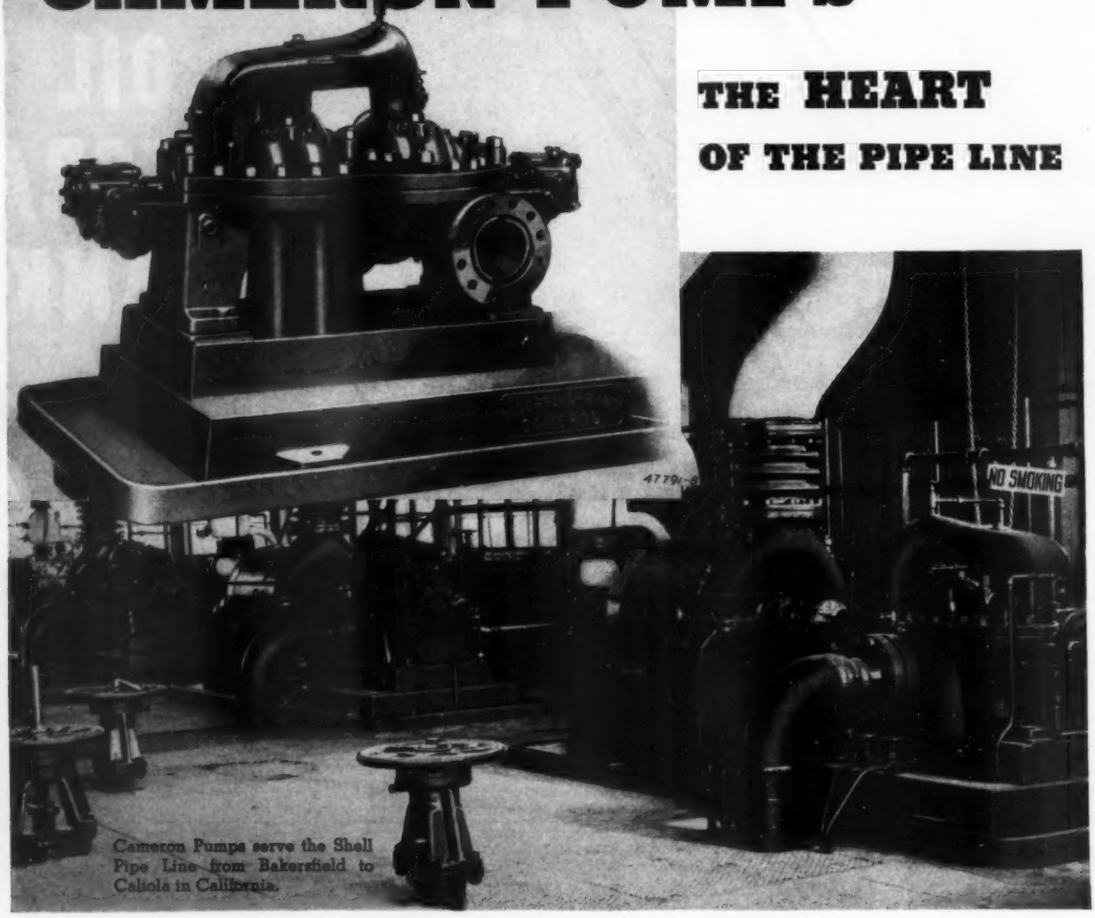
PITTSBURGH, PA. 3496 NEVILLE ISLAND — DES MOINES, IA. 997 TUTTLE ST.

NEW YORK, ROOM 980, 270 BROADWAY . . . CHICAGO, 1202 FIRST NATIONAL BANK BUILDING

DALLAS, 1201 PRAETORIAN BUILDING . . . SAN FRANCISCO, 603 RIALTO BUILDING

CAMERON PUMPS

THE HEART OF THE PIPE LINE



Cameron Pumps serve the Shell Pipe Line from Bakersfield to Caliola in California.

12 CAMERON PUMPS ON THE SHELL PIPE LINE

The Cameron Pipe-Line Pump is an outstanding unit in every respect. It was designed specifically for pipe-line service which demands so much from a pumping unit. Handling large volumes of petroleum at high pressures, it can always be relied upon for faithful and efficient performance.

Twelve No. 6, four-stage, Cameron Pumps serve 92 miles of the Shell Pipe Line in California. Each pump is driven by a 350 hp. steam turbine and is designed to handle 1200 barrels per hour at 500 lbs. pressure or at 1000 lbs. pressure with two units in series.

Atlanta
Birmingham
Boston
Buffalo
Butte
Chicago
Cleveland
Dallas
Denver
Detroit
Duluth
El Paso
Hartford
Houston
Knoxville

Ingersoll-Rand

11 BROADWAY, NEW YORK CITY

373-10

Los Angeles
Newark
New York
Philadelphia
Picher
Pittsburgh
Pottsville
Salt Lake City
San Francisco
Scranton
Seattle
St. Louis
Tulsa
Washington

That EXTRA Quality

Except that one strand is yellow, "Flex-Set" Preformed Yellow Strand Rotary Lines look like any other lines. Then where is that extra quality that makes for extra economical service? The answer is:

It's in the extra quality wire drawn to our own exacting specifications—It's in the extra care used in testing that wire in our laboratory—It's in the selection of those wires which will produce the fine balance of flexibility, elasticity, strength and toughness so necessary to rotary lines.

Finally, it's in the preforming, which sets the wires and strands to the helical form they will occupy permanently in the finished lines. They are thus largely pre-broken in—limp—easy to handle and install—highly resistant to kinking, drum crushing, fatigue.

Try "Flex-Set" Preformed Yellow Strand Rotary Lines for economy.

BRODERICK & BASCOM ROPE CO., Factories, St. Louis; Seattle; Peoria.
Houston Branch: 1311 Palmer St., Houston, Texas U-8

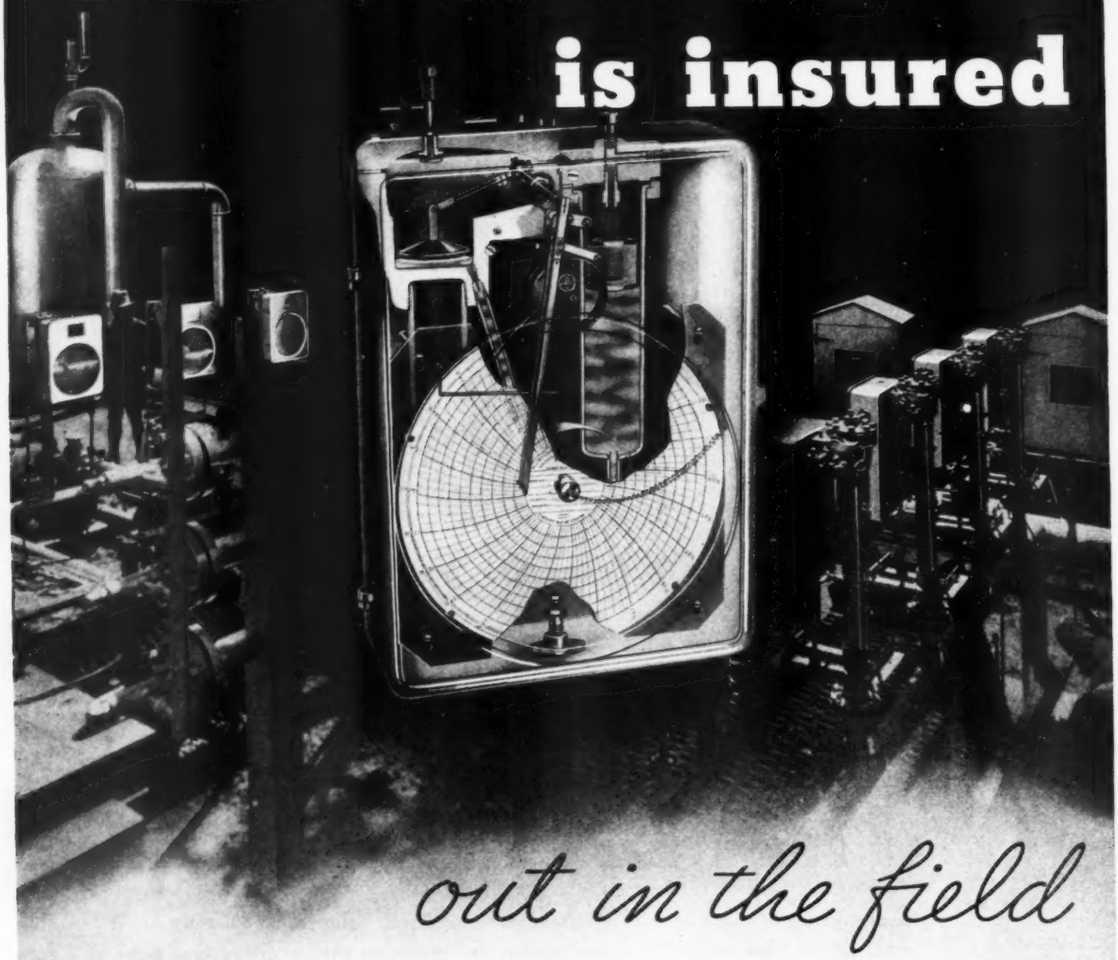
The Continental Supply Co.
Mid-Continent Distributors
Adequate Stocks in All Active Fields

The Republic Supply Co.
of California
Oil Field Distributors for California

The McJunkin Supply Co.
Charleston, West Virginia

"FLEX-SET" PREFORMED YELLOW STRAND ROTARY LINES

Where accuracy is insured



out in the field

All of the many significant Westcott refinements in construction have a single purpose . . . a PRACTICAL meter that will HOLD its fine in-built sensitiveness and accuracy—no matter how rigorous the conditions of service, whether for Indicating, Recording or Integrating instruments. ● Accuracy must be BUILT INTO a meter. In the Westcott orifice meter, it is embodied in a score of outstanding features: The precision machining of the differential gage body chambers . . . the low angle of travel of the float . . . the small angular travel of the static pressure tube . . . only one movable part between the mercury surface and the chart record . . . ● Printed or personal engineering information is available on request. Specifications on the popular new Round Case Indicating Flowmeter also may interest you.

344

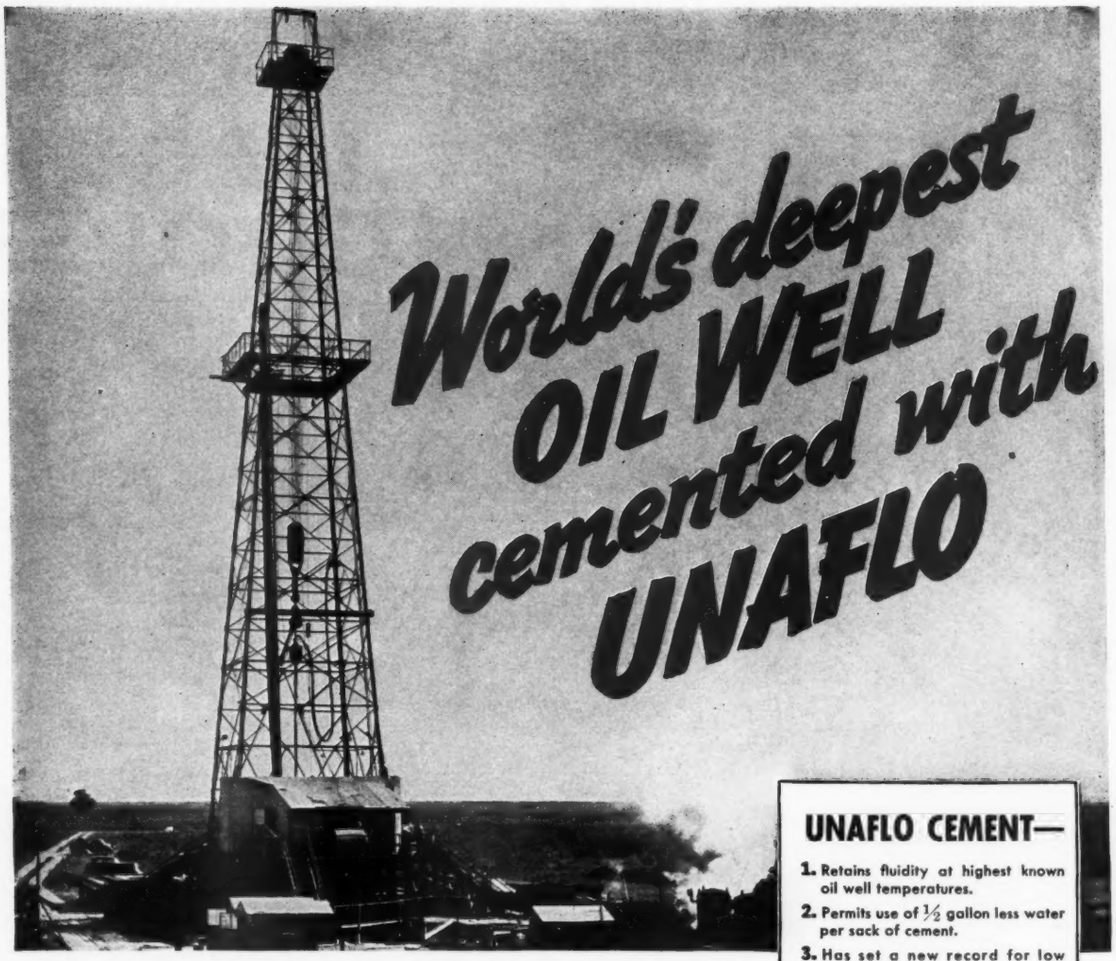
AMERICAN METER CO.

AMERICAN METER COMPANY

Measurement and control of Gas, Oil, Steam, Air and Liquids

METRIC METAL WORKS *ERIE, PENNSYLVANIA*

See the full line of American Meter Company instruments at the Houston **OIL-WORLD EXPOSITION,** *Oct. 11-16. The exhibit will be in charge of the Westcott & Greis division of American Meter Company.*



World's deepest OIL WELL cemented with UNAFLO

Two new world records were established in the oil fields this year . . .

The deepest well ever completed as a producer was brought in.

The deepest oil well cementing ever attempted was successfully accomplished.

Unaflo was the cement. It was chosen on its record of success in casing and plug-back jobs and also on the basis of the well company's laboratory tests.

The temperature was 218° F. eight hundred feet above the casing shoe. This is hot—but Unaflo is tested to 360° F.

Time for the complete operation was 1 hour and 22 minutes. Unaflo is pumpable 2 additional hours at this temperature. But it was a good test of the pumpability of Unaflo. 430 bags mixed 15 pounds per gallon were landed with a single slush pump at 1250 pounds per square inch maximum pump pressure.

On this same well, Unaflo was used to plug back. The operation was completed without mishap at this high temperature.

No ice was used in cementing this well.

Cement drilled up was "hard."

Try Unaflo on *your* next job!

Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), Amicable Bldg., Waco, Texas; Kansas City; Tulsa; Oklahoma City.

UNAFLO CEMENT—

1. Retains fluidity at highest known oil well temperatures.
2. Permits use of ½ gallon less water per sack of cement.
3. Has set a new record for low pump-down pressures.
4. Follows irregularities of well bore and casing.
5. Attains full strength rapidly under high temperatures.
6. Remains fluid even when contaminated by mud.
7. Remains fluid while being placed, thus forming an impermeable seal against the movement of formation fluids.
8. Has proved in the field that it "sets up" in sulphate waters.
9. Has repeatedly remained fluid for more than two hours on squeeze jobs where pressures and temperatures were extreme.
10. Is a safer cement for oil string and repair jobs.

USS

U-13

UNAFLO

FOR SAFE DEEP-WELL CEMENTING

BOTH NEEDED

"NORTHERN NATURAL" *and* BOTH COOPER-

Showing the two Type-19 compressor units, each rated 800 H. P., at the Ogden, Iowa, station.

To meet the increasing demand for natural gas in Minneapolis and St. Paul, the Northern Natural Gas Company once again has said, *"Give us more Cooper-Bessemers!"*

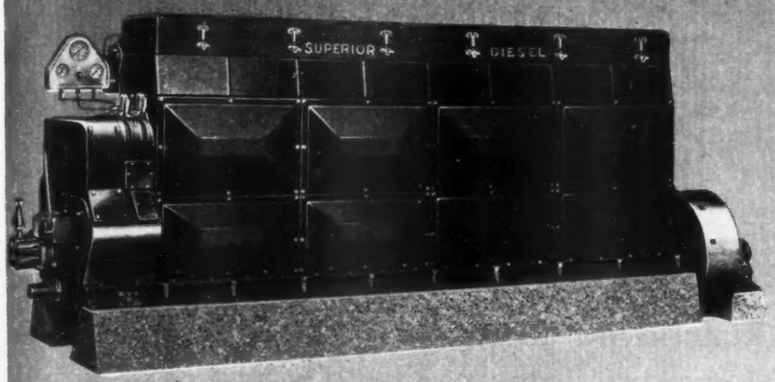
The newest main-line compressor station is located at Ventura, about 12 miles west of Mason City, Iowa. Three Type-19 twins (each rated 800 H. P.) will insure the same uninterrupted service that has made Cooper-Bessemers so satisfactory in the four other stations, shown.

THE COOPER-BESSEMER CORPORATION

Mt. Vernon, Ohio — PLANTS — Grove City, Pennsylvania

Superior DIESELS

Possess every desirable feature of modern design to give most efficient, reliable service on Pipe Lines. Convertible to Gas.

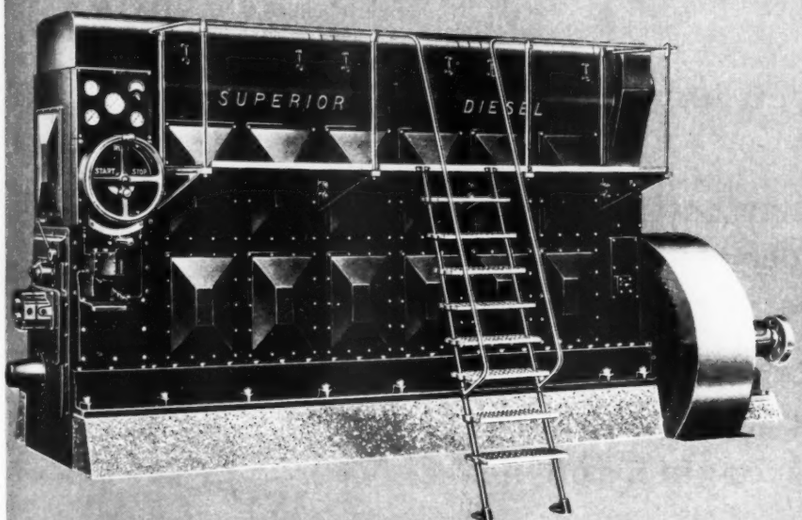


350 H. P., 8 Cylinder, Medium Speed, 4 Cycle.

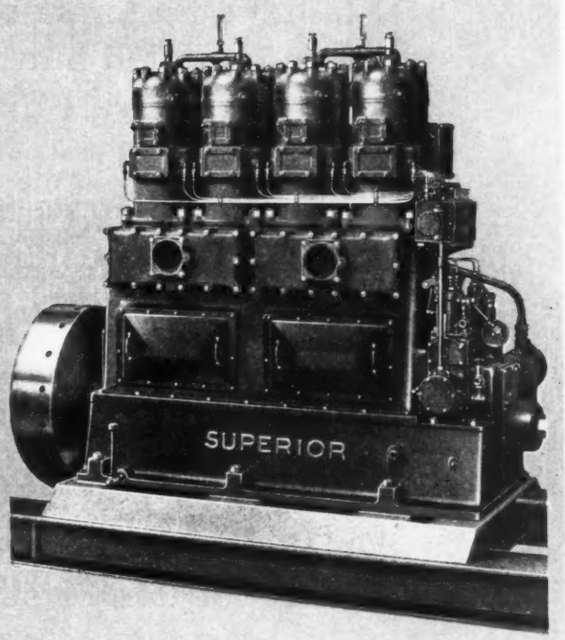
4 Cycle, 65 to 800 H. P. for Centrifugal or Plunger Type Pumps.

•

2 Cycle, 50 to 240 H. P., for Gathering Line and Portable Units.



160 H. P., 4 Cylinder, Medium Speed, 2 Cycle



550 H. P., 6 Cylinder, Slow Speed, 4 Cycle.

National

NSCO
REG. U. S. PAT. OFF.

THE NATIONAL SUPPLY COMPANY OF DELAWARE

DIVISION OFFICES: PITTSBURGH, PA., FORT WORTH, TEXAS, TULSA, OKLA., TORRANCE, CALIF. • MAIN OFFICE: TOLEDO, OHIO

Flag him down

Stop the motorist with a name that attracts him—tell him a story that interests him—and sell him a gasoline that delights him

You can do that if you have Dubbscracked gasoline to sell

Dubbscracked is an arresting name (nothing to do with speed cops) Why Dubbscracked gasoline is better is an interesting story

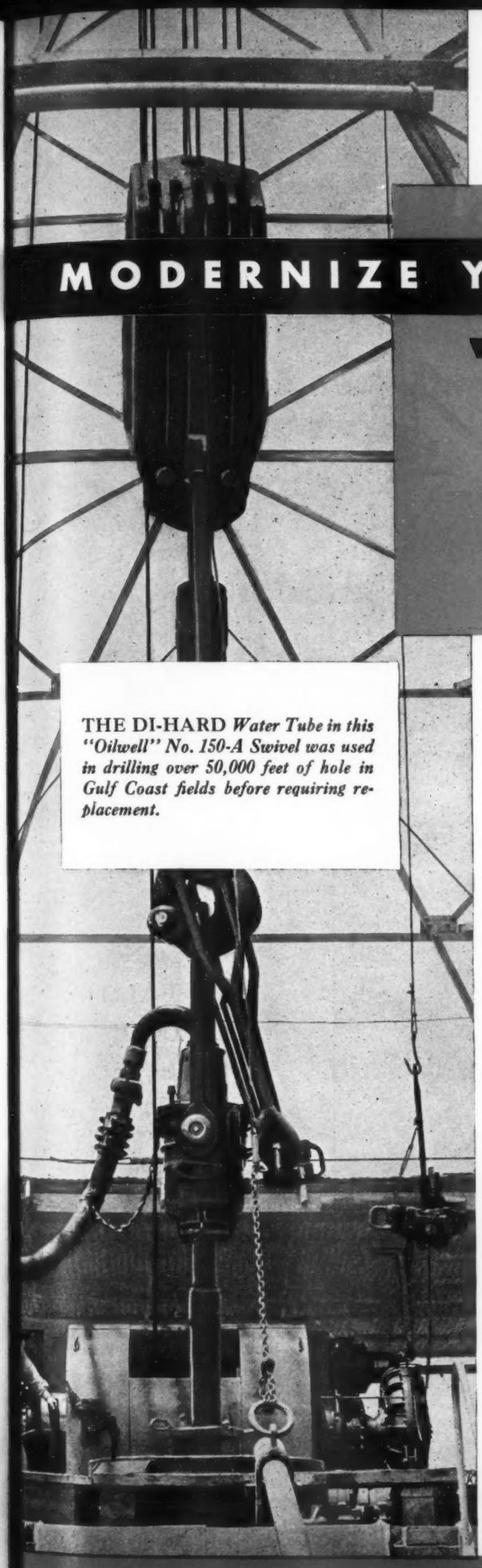
Dubbscracked gasoline tells that story itself in the motorist's engine and he comes back for more

Tell the world with banners

Dubbscracked is always banner gasoline

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor



THE DI-HARD *Water Tube in this "Oilwell" No. 150-A Swivel was used in drilling over 50,000 feet of hole in Gulf Coast fields before requiring replacement.*

MODERNIZE YOUR ROTARY RIGS

"OILWELL"

BUILDS RUGGED SWIVELS

The kind that drillers like

"OILWELL" Swivels give trouble-free service. There are many reasons. Here are three:

DI-HARD Water Tube—

- ★ is extremely hard—over 600 Brinell
- ★ is highly resistant to abrasion
- ★ has a very low coefficient of friction
- ★ outwears many times the best heat-treated steel tubes . . . packing lasts much longer

Type "A" Water-Tube Packing—

- ★ requires no adjustment
- ★ prevents leakage under all pressure and temperature conditions
- ★ outlasts other packings and prolongs water-tube life

Extra-heavy, heat-treated Goose Neck with reinforced Long-Radius Bend—

- ★ reduces flow restriction
- ★ gives much longer service than conventional type

SWIVEL RATINGS

NO. 100

100 TONS AT 100 R. P. M.

NO. 150-A

150 TONS AT 150 R. P. M.

DIAMOND 1862 OILWELL 1937 JUBILEE

75 years of progress

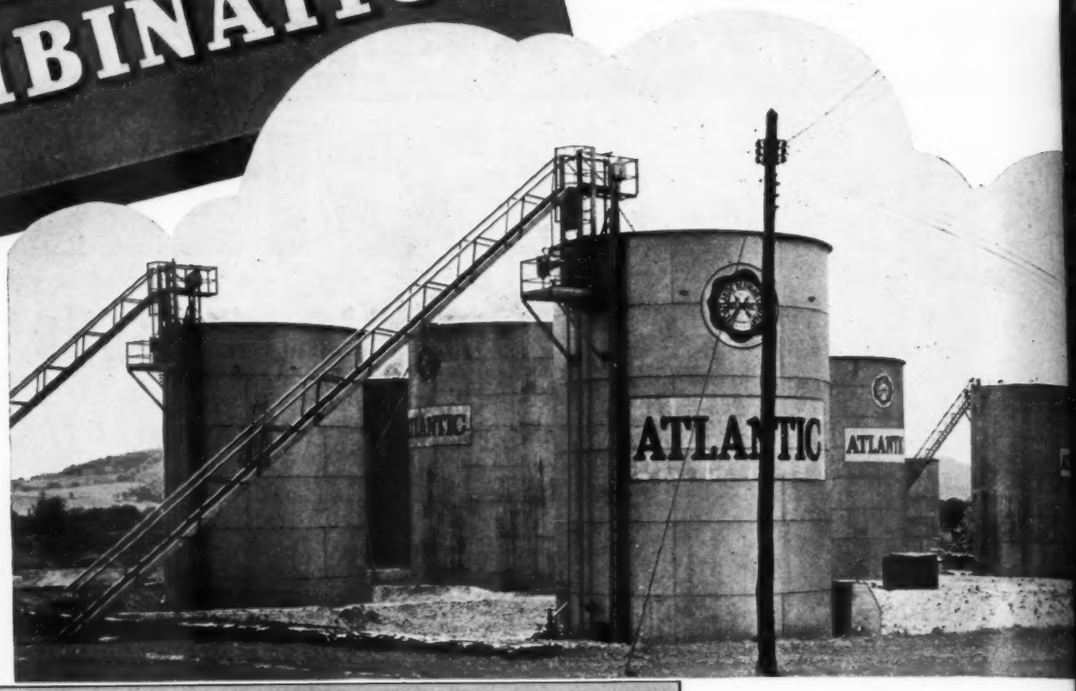
OIL WELL SUPPLY COMPANY

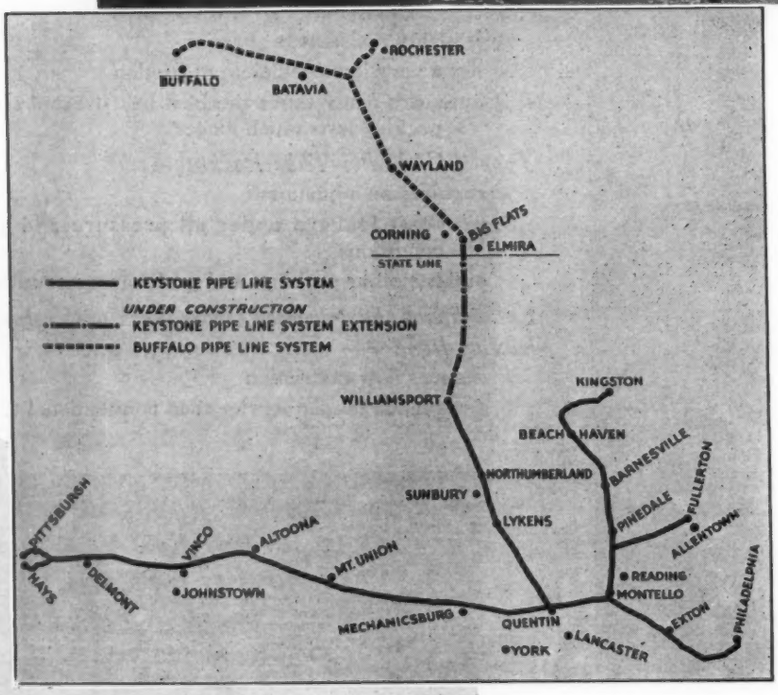
Subsidiary of United States Steel Corporation

Branch Stores in All Oil Fields

"OILWELL"

A WINNING COMBINATION





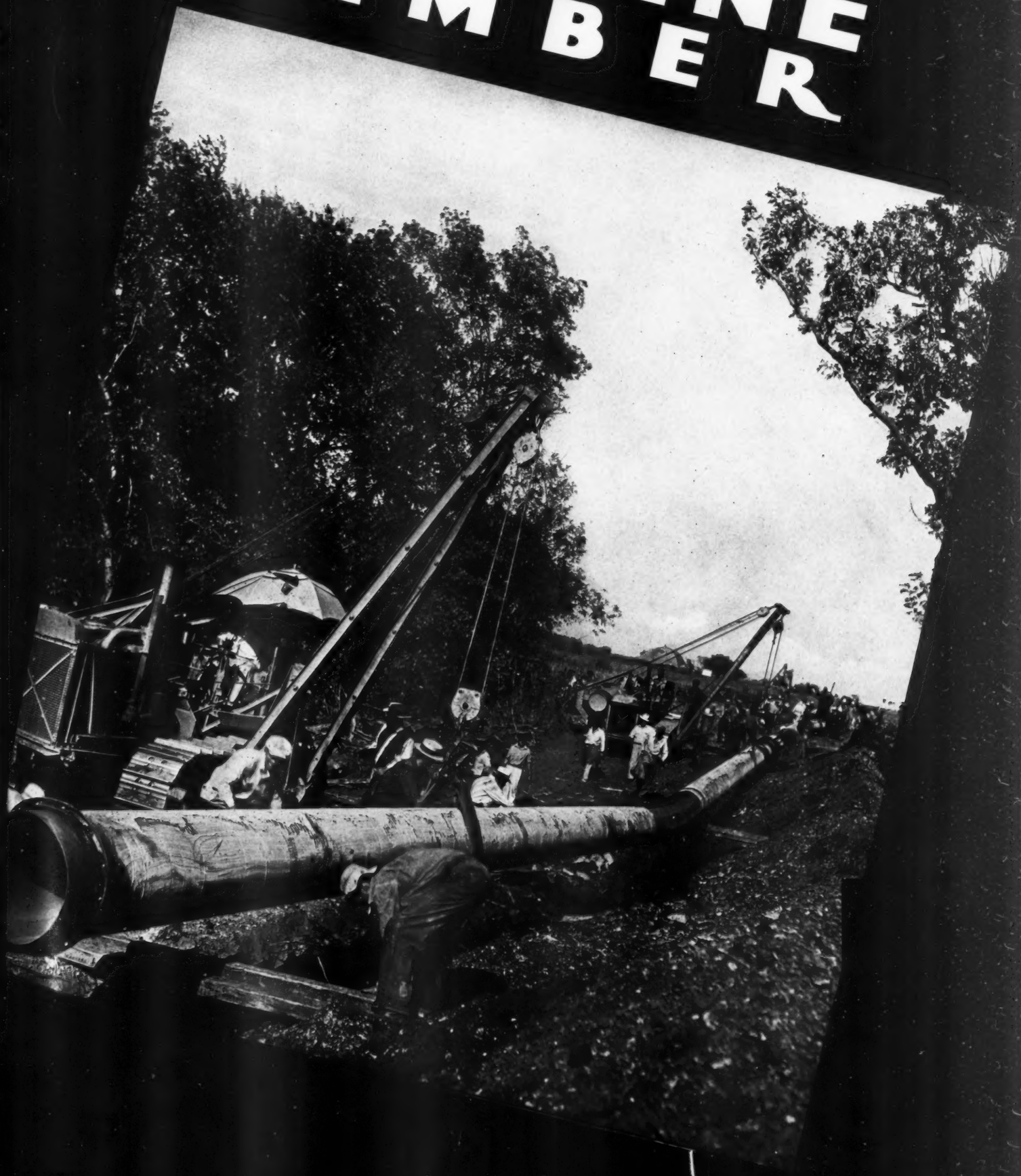
KEYSTONE & BUFFALO PIPE LINE SYSTEMS

The accompanying map shows the general location of the Keystone & Buffalo Pipe Line Systems which carry gasoline for the Atlantic Refining Co. The pictures show some of the seventy-three installations of Wiggins Pontoon Roof tanks for Atlantic along this line. Reading from lower left to upper right the pictures show tanks at Kingston, Montello, Mechanicsburg, and Exton, Pennsylvania.

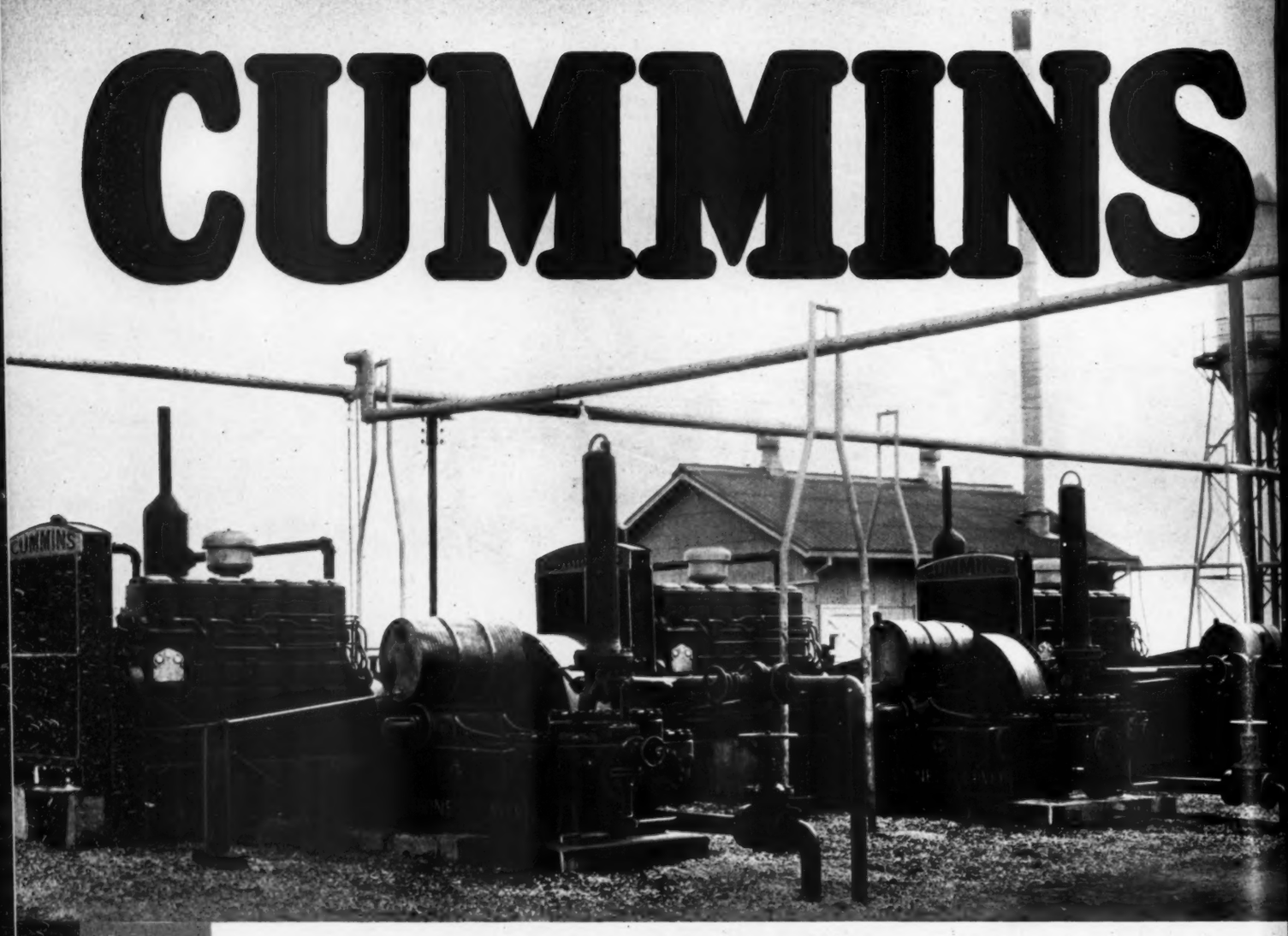
CHICAGO BRIDGE & IRON COMPANY

Fabricating Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

11th ANNUAL PIPE LINE NUMBER



CUMMINS



Recognized Everywhere as the

DEPENDABLE DIESEL

CUMMINS DIESELS
In Pipe Line Service

Above is photograph of typical pipe line installation of Cummins Full Diesel Cold Starting Engines. 3—model KOI—600, 180 H. P. Cummins Diesels with "V" belt drive to 5 x 10 power pumps, parallel installation independent of each other, each unit handling approximately 5,000 barrels daily against 750 lb. line pressure.

MID-CONTINENT SUPPLY CO.

REFINERY · PIPE LINE · OIL & GAS WELL SUPPLIES

General Offices Mid-Continent Bldg., Fort Worth, Texas

LEVELANDS" . . . .

GO ANYWHERE ANYTIME... *and* DIG!

Most "machine-ditch" at least cost. That's what you get, with "CLEVELANDS."

Compact, fast, flexible—easy to move around the job—easy to move around the country—"CLEVELANDS" are built to endure. The toughest, hardest materials are used, without restriction as to cost, enabling you to save money and get more work done.

"CLEVELANDS" are driving this story home, out on the line, every day. Proof, on your own work is yours for the asking. Write or wire today.

HE CLEVELAND TRENCHER CO.

"PIONEERS OF THE SMALL TRENCHER"

20100 St. Clair Avenue **Cleveland, Ohio**

General view of coating yard at Palmer, Kan., where 20 miles of 20-inch pipe were coated by this new method for the Northern Natural Gas Co.

ENTIRE PIPE LINE MACHINE-COATED ON-THE-JOB

by Coating Manufacturer

WE HAVE developed an on-the-job machine-coating method which not only assures more certain and more permanent corrosion-protection for oil and gas pipe, but enables you to secure the **exact kind of job** you want:

1. Bitumastic Primer and Bitumastic 70B Enamel alone.
2. Bitumastic Primer and 70B Enamel with single or double, bonded or unbonded felt wrapping, applied in one continuous run.

Pipe that is coated on-the-job can be delivered **unwrapped** to the right-of-way without appreciable damage to the coating. This was demonstrated on the Northern Natural Gas job as well as on hundreds of miles of harder-to-handle water lines (as large as 78" dia., weighing 12,000 lbs. or more per length). Electric holiday detector is used **in yard and field** to insure perfect application before the line is field wrapped or unwrapped line is back filled.

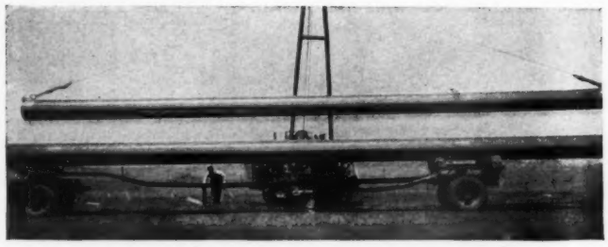
Coating field joints is also included in our contract—freeing the laying contractor from **any** attention to coating application, assuring him against suffering delays . . . and placing undivided responsibility for yard and field coating upon the only manufacturer whose products have been made long enough to **prove** their dependability.

Bitumastic has been protecting pipe and other metal surfaces for over half a century. Bitumastic 70B Enamel—the result of improvements in the basic formula—has greater flexibility . . . unusual resistance to soil stress (in spite of this flexibility) . . . greater resistance to expansion and contraction of the pipe . . . much greater adhesion . . . better ability to withstand handling abuses—and the time-proved Bitumastic ability to withstand corrosion. It is the ideal coating material for oil and gas pipe protection.

And we will set up yard shops **anywhere** to apply it with our modern economical, on-the-job machine-coating method.

NO OTHER PIPE COATING MATERIAL HAS BEEN IN USE AS LONG AS **BITUMASTIC** NO OTHER EQUALS ITS PERFORMANCE RECORD

THERE IS NO SUBSTITUTE FOR EXPERIENCE



Unwrapped pipe arriving at field in perfect condition.

Features of This New On-The-Job Machine-Coating

- Yard shops set up near right-of-way.
- Pipe coated well in advance of laying needs. A reservoir of coated pipe is customary. Therefore, contractor suffers no delay.
- No field hazards; minimum weather delays.
- No waste of coating material; no drips, runs or festoons.
- Only one run through machine for coating and wrapping.
- Double checked; holiday detected in both yard and field.
- Coating field joints included in contract

GENUINE BITUMASTIC PRODUCTS ARE USED

Coating fire bend. Applying unbonded felt wrapper in field.

•

Also Manufacturers of INDUSTRIAL PAINTS for All Exterior and Interior Plant Surfaces

WAILES DOVE-HERMISTON CORPORATION

BOSTON PHILADELPHIA CLEVELAND CHICAGO TULSA SAN FRANCISCO LOS ANGELES

17 BATTERY PLACE • NEW YORK, N. Y.

MODERN
PIPE LINE EQIPMENT
for right of way work, Rock Drilling, Pumping
PAYS FOR ITSELF

SHREWD SELECTION OF MACHINERY CUTS COSTS
Our complete lines are all proven pipeline profit producers.

EFFICIENT OPERATION is the key to profit in the modern pipeline industry.

There was a time when high prices and abundant work made pipeline construction quite profitable. Today you must use modern methods, efficient equipment and trained men to succeed. For years, Leland Equipment Company has assisted in the selection of machines best suited to solve the problem on each specific job.

Leland Equipment Company confidently recommends the following equipment:

Chicago Pneumatic Air Compressors, Rock Drills and Grinders.

Gorman-Rupp Pumps handling water, oil and B. S.

Koehring Shovels or Backhoes on jobs requiring heavier machines.

Spencer Trailers for stringing and heavy hauling.

Caterpillar Diesel Engines for power and light.

Tulsa Truck Winches—Beebe Hand Winches—Roebling Wire Rope—Timken Rock Bits—Kwikmix Concrete Mixers—Supplies.

LELAND EQUIPMENT COMPANY is proud of its connection with the pipeline industry, particularly of the opportunity your patronage has given us to solve the difficult problems that can only be solved with machinery. Wherever you are, we sincerely solicit your inquiries.

RENTAL EQUIPMENT AVAILABLE ON INQUIRY

CHICAGO PNEUMATIC AIR EQUIPMENT

GORMAN-RUPP SELF-PRIMING PUMPS

TULSA WINCHES—SPENCER TRAILERS

KOEHRING DITCHERS AND DRAG LINES

CATERPILLAR DIESELS

LELAND EQUIPMENT CO.

TULSA LONGVIEW DALLAS

Aerial Photography

SAVES TIME AND MONEY

IN ROUTING PIPE LINES

WE MAP THE MAP ANYWHERE

Area which Aero Exploration Co. has mapped for the Government, Oil Companies, and Pipe Lines.

Engineers find that routing of pipelines can be executed more satisfactorily, with less time and money, by use of aerial maps. One major oil company spent $3500 to get an aerial map of 160 miles of right-of-way. A study of the map showed 30 miles of the right-of-way, previously acquired, undesirable because of topography, excessive timber and cultural disadvantages. Rerouting saved more than $15,000.

Aerial Maps are also more accurate in defining surface reflection of subsurface structure.

Phone or write Aero Exploration Co., Tulsa, for further information.

Phone 3-4765
Night phone 3-9244

Cable Address,
AEROEXCO

CONTRACTORS TO THE U. S. GOVERNMENT

AERO EXPLORATION CO.

TULSA, OKLAHOMA

EASY TO READ!

At Last . . . an improved steel tape with a white, crack-proof surface

Here is a steel tape you can read at a glance, even in dim light. The white background contrasts sharply with crude oil to give you a well defined level mark. Black-on-white graduations greatly reduce the possibility of errors.

And WYTEFACE is serviceable. A new resilience checks kinks or curls; a crack-proof surface protects the steel from rust . . . exclusive WYTEFACE features that greatly increase the useful life of the line.

You'll want the advantages of this improved steel tape. Ask your dealer, or write for a complete catalog.

K&E WYTEFACE

TRADE MARK

STEEL MEASURING TAPES

Made in all sizes and types, in cases and on reels, for every oil field requirement. Lines for automatic gauge installations are available on special order. Listed in the Composite Catalog. Sold through all Supply Companies.

MADE IN U.S.A.

EST. 1867

KEUFFEL & ESSER CO.

HOBOKEN, N. J.

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO DETROIT MONTREAL

THE MAKING O

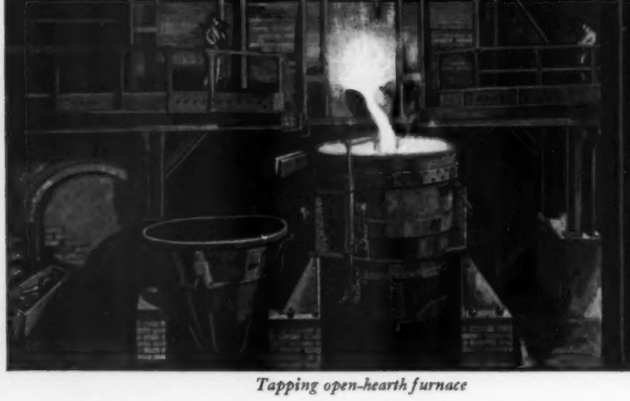
Ore bridge and piles of raw material *Special ore-handling car* *Car dumper (in background)*

Under huge ore bridges, used for unloading, are stored raw materials for steel making: (1) Iron ore, a reddish-brown earth, much the same in composition as rust. (2) Coal that is converted into coke and used as fuel in the blast furnaces. (3) Limestone, the flux that forms the slag and carries off the waste from the smelting process.

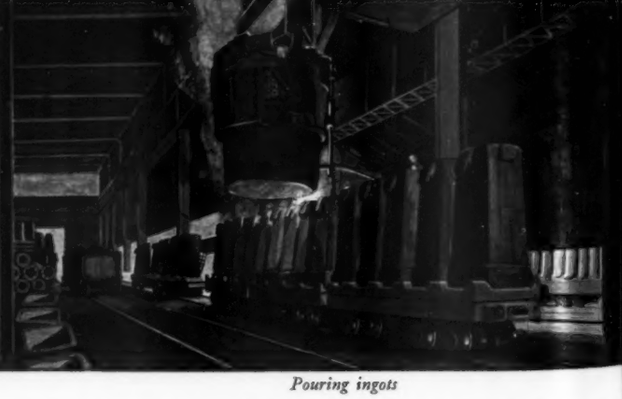
Blast furnace and air-heating stoves

Tapping the blast furnace

A pair of cars on an inclined runway feed ore, coke and limestone into the top of the blast furnace. Hot air is pumped in near the bottom. In the intense heat the iron ore is reduced to metallic iron, which trickles to the hearth. About five times a day it is tapped off. Waste gas is used to generate power and as fuel in the air-heating stoves.



Tapping open-hearth furnace

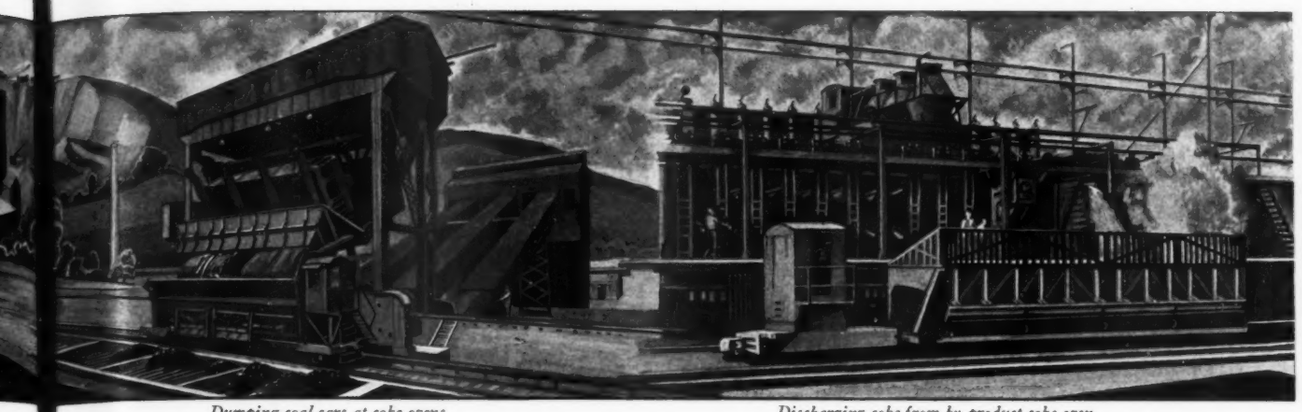


Pouring ingots

After about ten hours in the open-hearth, the iron has been refined into steel. The steel is tapped out into a ladle which takes the full heat, perhaps a hundred tons, to the pouring floor. There the liquid is poured into molds and solidifies into solid steel ingots—ordinarily about 28 inches square and six feet long.

BETHLEHEM S

OF STEEL



Dumping coal cars at coke ovens

Discharging coke from by-product coke oven

Soft coal, a car-load at a time, arrives at the coke ovens. Here it is baked until all gases are driven off. Then the resulting white-hot coke is drenched with water for cooling. Besides coke, these ovens produce gas that is used as fuel in the plant, as well as tar, ammonium sulphate, benzol and other by-products for industrial uses.

Pouring molten iron into pig-casting machine

Pouring molten iron into open-hearth furnace

Iron to be used by foundries to make castings is cast into pigs by pouring into molds carried on an endless chain. Iron to be made into steel is generally stored in the molten state in hot-metal mixers. As needed it is taken to the open-hearth furnace in huge ladles and poured in after steel scrap and limestone have been charged.

Taking ingot from soaking pit

Rolling ingot in blooming mill

Ingots, still hot, are taken to the soaking pit, a furnace where they are heated uniformly throughout for rolling, then to the blooming mill, where a number of passes stretch the stumpy ingot into a long bloom, of much smaller cross-section, which is cut into shorter lengths for the finishing mills.

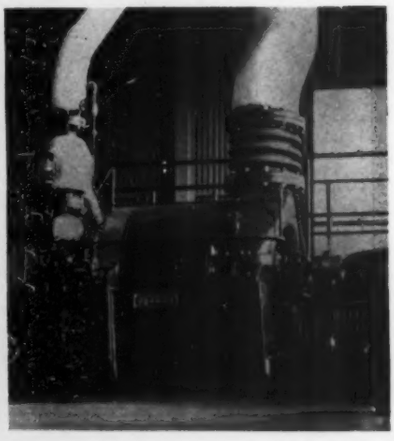
STEEL COMPANY

BETHLEHEM STEEL

The IDEAL EXPANSION JOINT

FOR BOOSTER STATION SERVICE

Badger Stainless Steel Directed Flexing, Self-Equalizing Expansion Joints.



View of main pipe line pump showing Badger low pressure copper expansion joint on steam lines.

Close-up of one of many Badger directed flexing, self-equalizing, stainless steel expansion joints used on oil lines.

BADGER Engineers have designed four types of expansion joints for Booster Station Service:

Type No. 1—Stainless Steel, Directed Flexing*, Self-Equalizing Joints for lines under high temperatures or high pressures; or where corrosive conditions prevail. (See picture).

Type No. 2—Deoxidized Copper, Directed Flexing*, Self-Equalizing Joints for lines under normal temperatures and pressures and where there is no corrosion.

Type No. 3—Stainless Steel, All-Curve Corrugation, Joints for low pressure and vibration where corrosive conditions exist. Also used as connections between machinery and lines to absorb vibrations.

Type No. 4—Deoxidized Copper, All-Curve Corrugation Joints for service similar to Type No. 3, except that conditions should not be corrosive. (See picture).

Back of these joints is more than forty years manufacturing experience coupled with a thorough understanding of expansion and vibration stresses set up in pipe lines carrying steam, liquids and gases. Badger Joints will give good service. In writing for further details, describe fully the service for which the joints are intended.

*DIRECTED FLEXING

is the term that describes both the design and functioning of the Badger Joints built for both normal and high temperature pressure service. The corrugations and the corresponding equalizing rings are "all-curve" in shape. When flexing, the movement is progressively controlled throughout and the flexing stresses are kept distributed. They cannot localize as is likely to happen in joints with the old-style, straight-sided corrugations and rings. The life of these joints is exceptionally long.

E. B. BADGER & SONS CO.

BOSTON, MASS.

Agents in Principal Cities

BADGER EXPANSION JOINTS

Specialists IN PIPE LINE ELECTRIC WELDING

Electric Welding Panhandle Eastern 24" Gas Line

Get the Best Welding—It costs no more.

H. C. Price Co. is the oldest and largest organization of its kind, which specializes exclusively on the electric welding of field joints of oil, gas, and gasoline pipe lines. The entire efforts of the organization are directed towards developing and improving the technique and efficiency of pipe line welding.

H. C. Price Co. performs no other portion of pipe line construction outside of the welding. By concentrating on welding only, this company has been successful in contracting a great majority of the electric welded pipe lines laid in this country, thereby holding constantly intact a large organization of expert electric welders and supervisors. These welding crews, together with the most modern electric welding equipment, are at your service wherever pipe lines are to be built. Already in 1937 H. C. Price Co. has completed and has under construction the electric welding of fourteen major pipe lines totaling 1280 miles.

By specifying PRICE-WELDED field joints you are assured of only the best welders and supervision.

The quality of the welds is of the most vital importance to the continuous operation of your pipe line.

H. C. PRICE CO.

Electric Welding Contractors

BARTLESVILLE, OKLA.

LOS ANGELES SAN FRANCISCO

BRADEN

Pioneered

Sectional Steel Buildings in the Mid-Continent Oil Fields

And BRADEN has continued to pioneer, in improved design, enhanced durability, maximum portability!

BRADEN Buildings have become the accepted standard for steel oil field buildings.

A 14-Year Tradition of Reliability and Service!

Designers—Fabricators—Erectors

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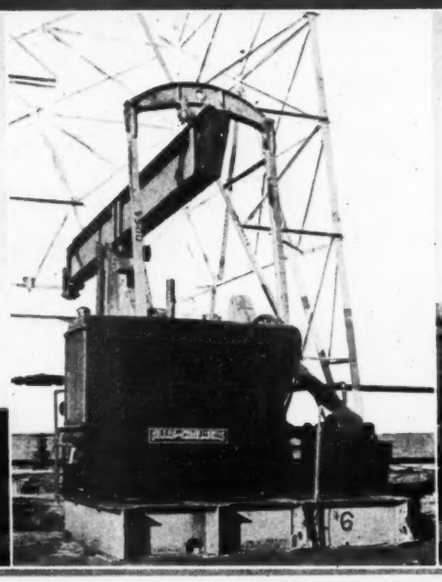
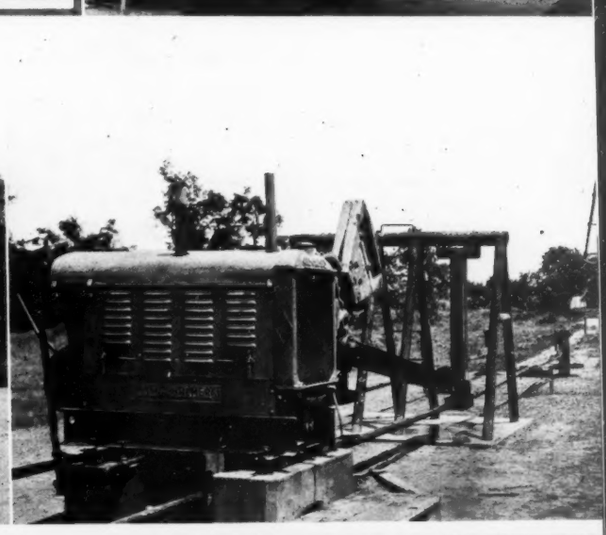
SECTIONAL STEEL BUILDINGS

Powered by ALLIS-CHALMERS



No matter whether the fuel be gas, gasoline or diesel oil, and regardless of the job to be done, nothing finer can be said of any pumping installation than "Powered by Allis-Chalmers." Model L & LO - 550 ft. lbs. torque; Model E & EO - 375 ft. lbs. torque; Model E & EO Oil Field Special - 375 ft. lbs. torque; Model U - 200 ft. lbs. torque; Model W - 128 ft. lbs. torque.

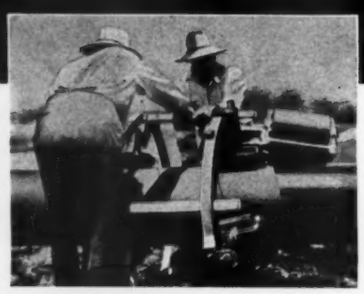


FRED E. COOPER
HALE STATION
TULSA, OKLAHOMA

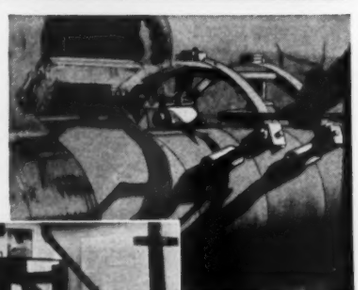
Wrapping an "INSURANCE POLICY" around a pipe line

From the Day your Pipe Line goes down, J-M Asbestos Felts provide Lasting Economical Protection against Corrosion

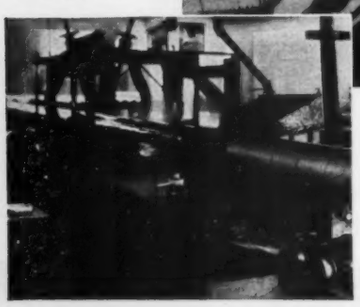
Johns-Manville
ASBESTOS PIPE-LINE FELTS
JOHNS-MANVILLE JM PRODUCTS



Rotary-type field machine wrapping asbestos felt over hot coating on a 16-inch welded line. →



24-inch Dresser-coupled line rapidly covered with saddle-type field machine. →



(Below) Wrapping with J-M Asbestos Felts at the pipe mill. Photograph courtesy of Hill-Hubbell & Co.

RECONDITIONING of corroded pipe lines is inevitable . . . and expensive. Added to labor and material costs are losses in operating revenue during shut-downs and the hazard of damage liabilities.

Yet, this can be guarded against . . . avoided . . . even before your pipe line goes down. At a fraction of reconditioning costs, J-M Asbestos Pipe-Line Felts afford permanent, low-cost insurance against the ravages of corrosion.

Immune to rot and decay, resistant to chemical and electrical action, J-M Pipe-Line Felts now hold an unequaled record of unimpaired service over a period of 20 years underground!

The asbestos fibres in J-M Pipe-Line Felts are non-tubular. They cannot support capillary action and will not draw in moisture. Thus, the waterproofing qualities of the bitumen coating are greatly enhanced. And by virtue of their mineral composition, these asbestos felts successfully combat electrolytic and galvanic action; distribute the clod pressure; and take the sheer and pull out of soil action.

Because it does provide lasting protection against corrosion, the use of J-M Pipe-Line Felt is a distinct economy. And the more so, since its application costs but a fraction of the reconditioning charges that would otherwise be incurred.

Johns-Manville engineers are especially qualified to discuss pipe-line protection, and would be glad to go over your problems with you. Write your local office, or Johns-Manville, 22 East 40th St., New York City. Our helpful brochure, "Johns-Manville Pipe Protection," is available upon request at the same address.

J-M ASBESTOS FELTS ECONOMICAL TO APPLY

J-M Asbestos Pipe-Line Felts can be applied by hand or by machine, at the mill, in the yard or in the field. For better field application and lower costs, wrapping by J-M Field Wrapping Machines is recommended whenever possible. This assures tightness, smoothness and a uniform overlap.

WESTCOTT VALVES

Proved IN THE TOUGHEST SERVICE

In countless instances, Westcott valves installed on pipe lines *seventeen years ago* are giving satisfactory service today. Yet, valves being produced by Westcott today are as far advanced over old types as modern methods of constructing pipe lines and other pipe line equipment supersede methods employed ten, twenty and thirty years ago.

A mixture having 65 per cent more tensile strength than ordinary gray iron is used in the manufacture of all Westcott *Semi-Steel* Valves. *Cast Steel* Valves are made from an alloy which will give the best proportionate tensile and yield strength. Stainless and hard face seating materials are provided at low cost, while designs have been modified to conform with these materials. The net result of these factors combined is a valve which will open and close quickly and easily, always providing an effective seal-off.

"Serving the Oil and Gas Industries"

THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS

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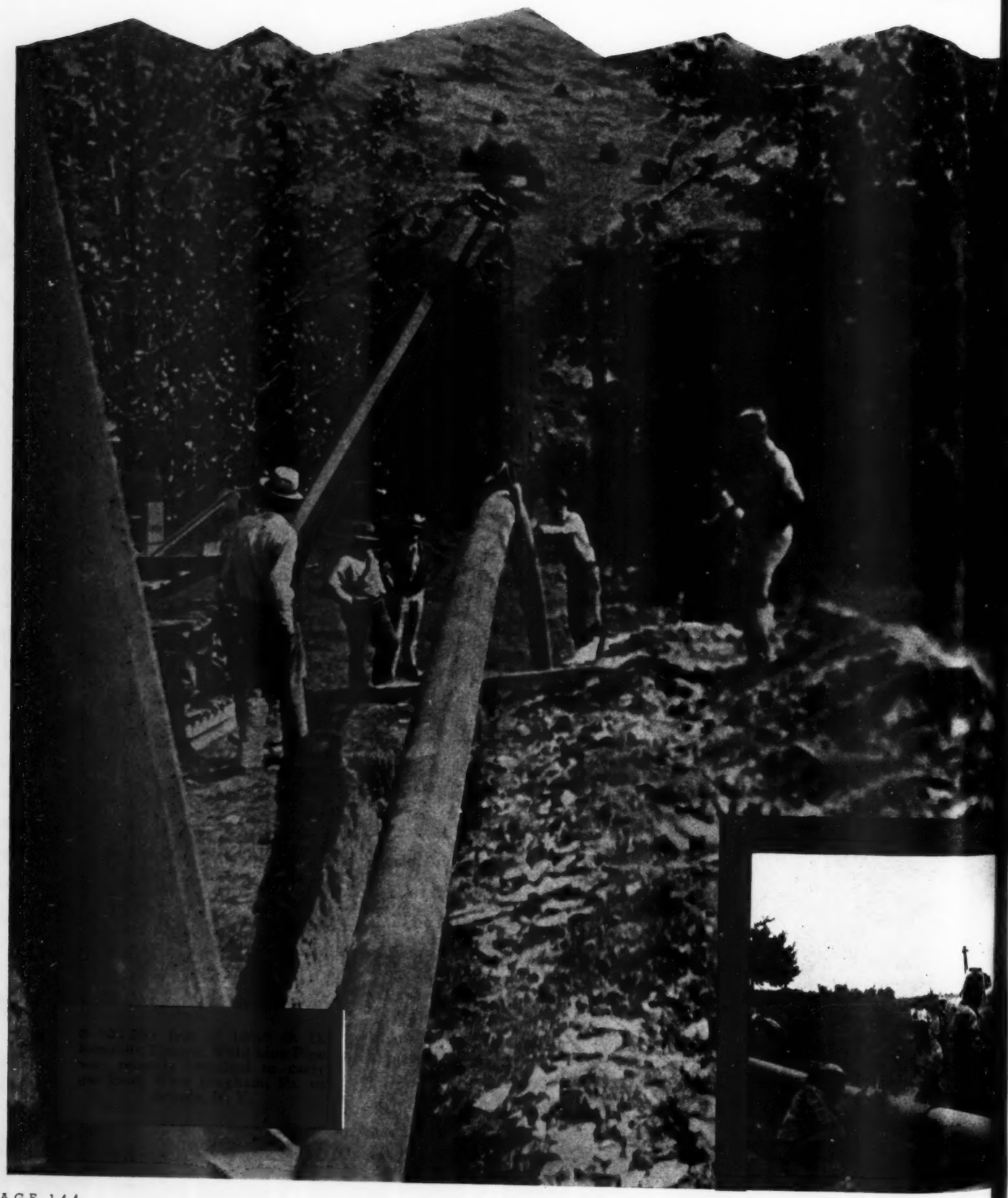
OIL WORLD EXPOSITION

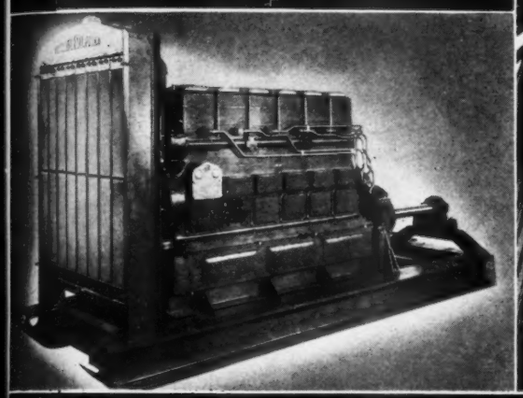
CONTINENTAL

where the going



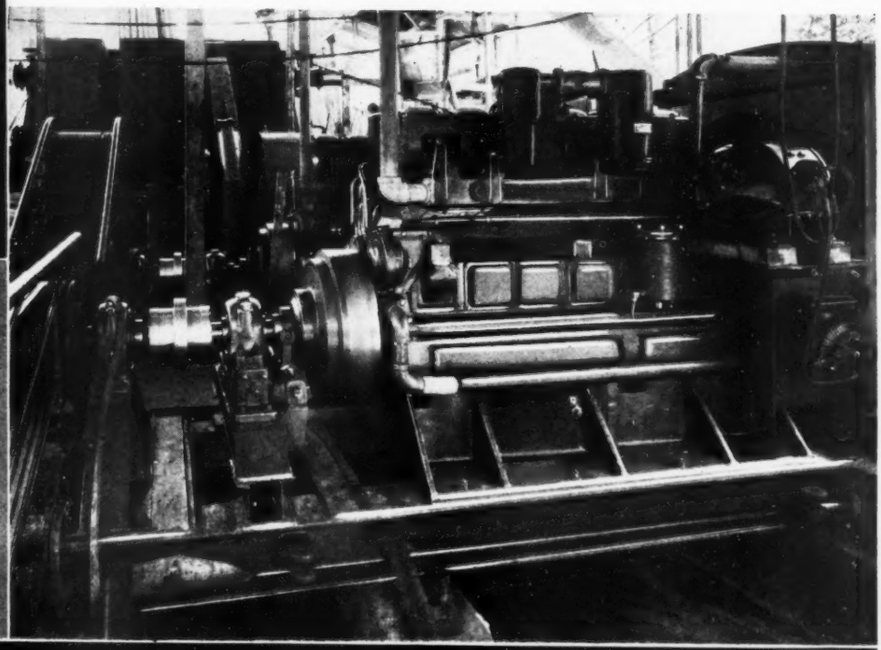
44 carloads

Quantity, Dependability, Economy ... now in use for powering rotary rigs and cable tool outfits in the west Texas oil fields ... repeat orders tell the story.

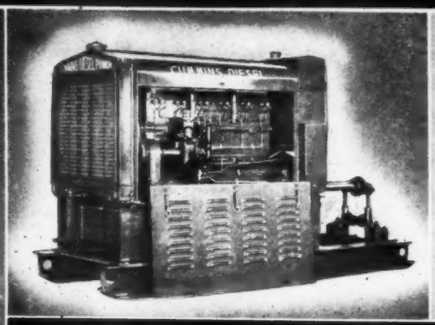


ABOVE: Industrial Models K 6, KO 6, and L 6. Model K 6, 150 h. p. Model KO 6, 180 h. p. Model L 6, 200 h. p.

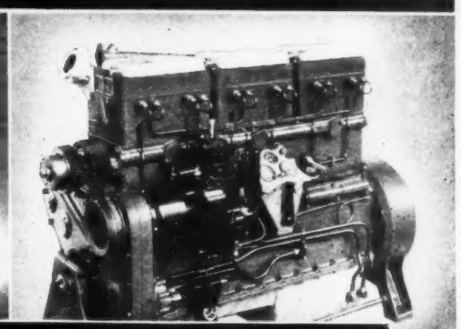
BELOW: A typical Cummins Diesel powered rig. These engines assure the driller the lowest power cost per foot of hole. They are cold starting, smooth running, economical in fuel, lubricating oil and upkeep.

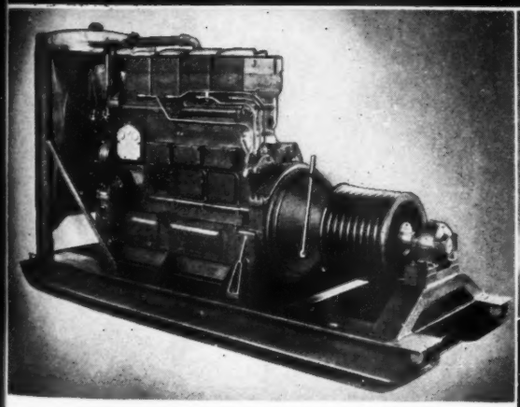


BELOW: Industrial Power Unit, Model HP 601. Rated at 85 to 125 h. p.



BELOW: Cummins Diesel Industrial Unit, Model HI 6. Rated at 85 to 125 h. p.





ABOVE: Model KO 4. With outboard bearing and pulley for V-belt drive. Built in three sizes: K, KO, and L, from 68 to 167 h. p.

MID-CONTINENT SUPPLY COMPANY
Exclusive Distributors Mid-Continent Territory
HOME OFFICE: FORT WORTH, TEXAS

CUMMINS ENGINE COMPANY
1220 WILSON STREET, COLUMBUS, INDIANA

CUMMINS
DIESEL
PIONEER IN MODERN DIESEL DEVELOPMENT

"GIVE" is used advisedly in the heading above because the important advantages of the long tangents available only on Midwest Ells cost you nothing extra. Tangent length is ¼ of the nominal fitting diameter. A 12" ell has tangents 3" long.

advantages:

1 Permits [illegible] quickly and accurately line up the pipe and fittings.

2 Easier [illegible] fittings [illegible] than when fittings have only short tangents or none at all.

3 Removes metal from the point of maximum bending stress (the end of the arc).

4 Reduces the amount of pipe required.

5 Frequently eliminates a short nipple and the extra circumferential weld it requires.

6 Possible to slip on forged steel flanges and weld them front and back.

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Main Office: 1450 So. Second St., St. Louis, Mo.

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Other Features

LONG RADIUS
Radius is 1½ times nominal diameter instead of being only equal to nominal diameter. Larger radius makes welding more convenient and reduces installation time. It also saves pipe and eliminates excessive pressure drop.

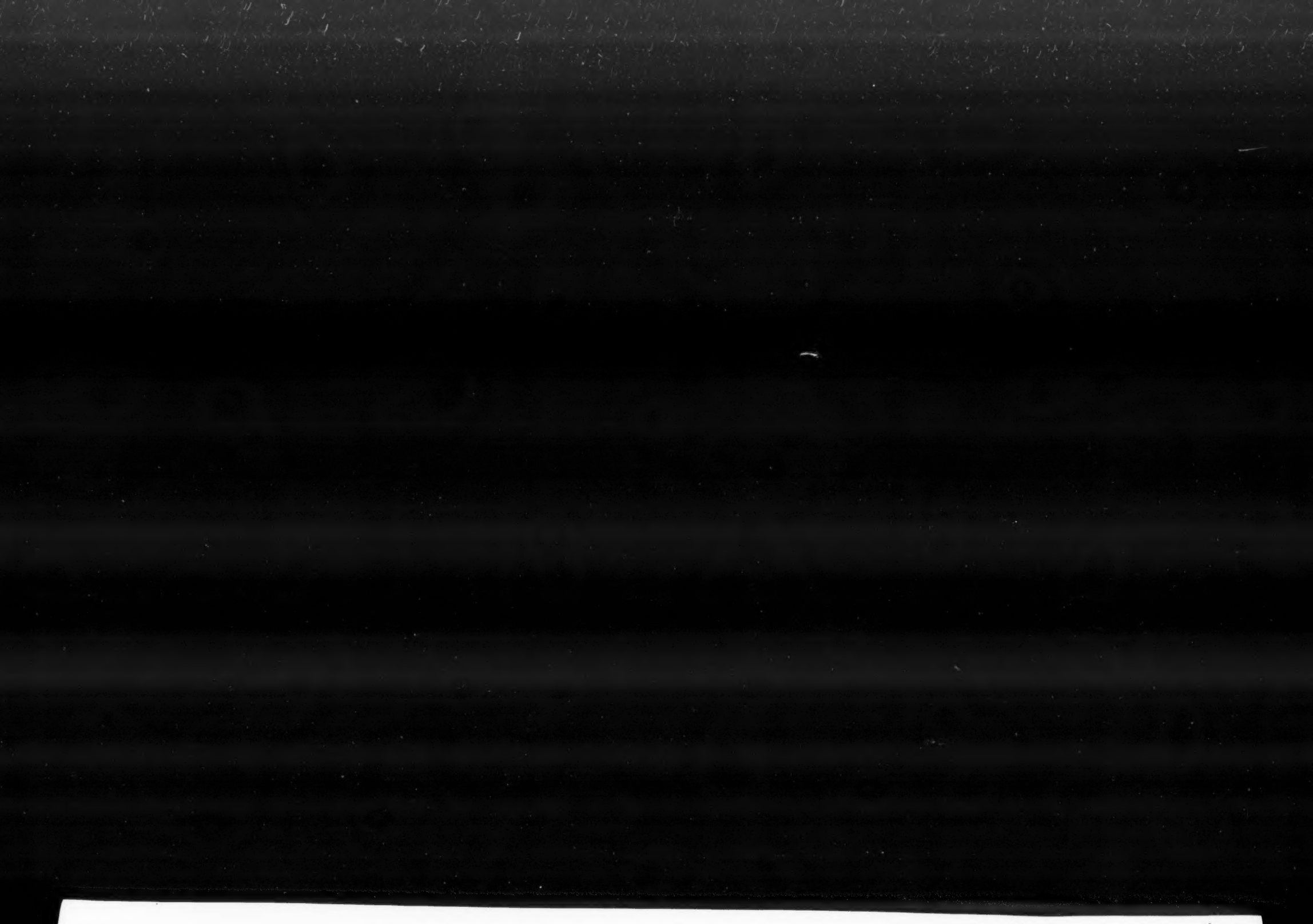
DIMENSIONAL ACCURACY
and uniformity not otherwise possible result from final working in compression.

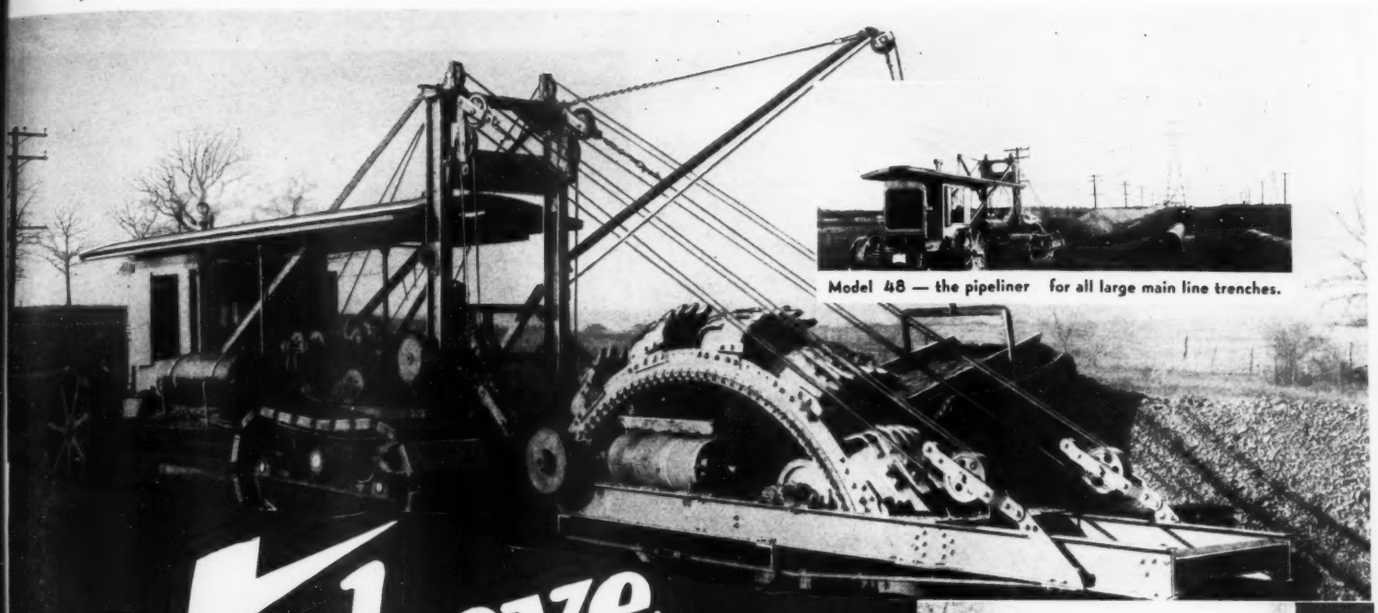
UNIFORM WALL THICKNESS
results from manufacturing process which is used exclusively by Midwest.

STRESS RELIEVED
Midwest Ells are first made slightly over-size. They are then reheated to a forging heat and reduced to correct size in compression.

GREAT STRENGTH
Destruction tests have proved Midwest Ells always as strong as the corresponding pipe.

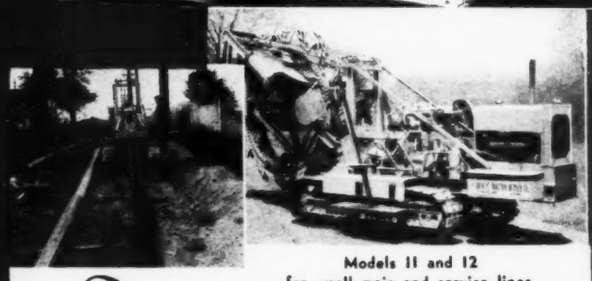
MIDWEST
WELDING FITTINGS IMPROVE PIPING
[illegible] AND REDUCE COSTS





Model 48 — the pipeliner for all large main line trenches.

Buckeye DITCHERS and EXCAVATORS



Models 11 and 12
for small main and service lines.

Save you money ON ANY TYPE-SIZE OR LENGTH OF ditching job.

New Modern models for every trench requirement, give you the last word in engineering for speed, accuracy, reliability and final economy.

As originators of the wheel type ditchers and builder of the equipment used on the most important pipe lines the world over, we offer you the experience of a third of a century in pipe line excavation equipment — the kind of experience that results in profits to you.

Buckeye ditchers have dug the trench for more miles of pipe line than all other makes of ditchers in the world — and today, more Buckeye Ditchers are in operation than any other ditchers built.

Buckeye has the answer to every ditching problem. It will pay you to consult our engineers before you start any ditching project, large or small.

THE BUCKEYE TRACTION DITCHER COMPANY

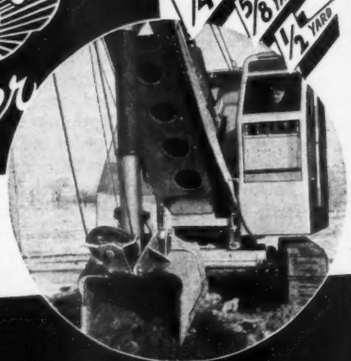
• FINDLAY, OHIO •

Buckeye Clipper

with

METERED VACUUM CONTROL

3/4 YARD
5/8 YARD
1/2 YARD



"Give an Operator a Machine He Likes and He Will Give You Yardage That Pays."

Here's a machine that piles up big yardage without calling for marathon endurance from the operator.

METERED VACUUM CONTROL speeds up digging by making every swing of the dipper fast and accurate. Fingertip pressure by the operator commands instant response from the machine.

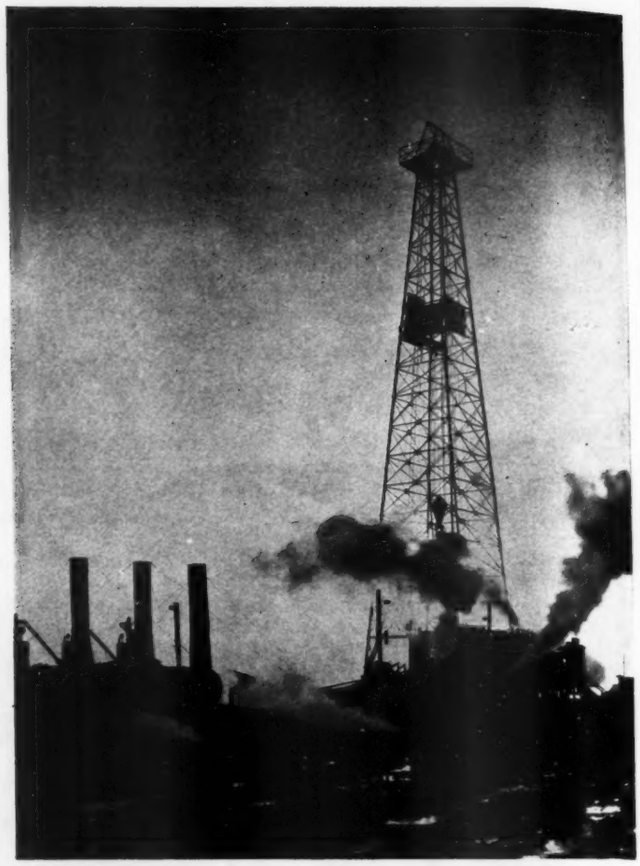
Convertible

SHOVELS—CRANES—TRENCH HOES—CLAMSHELLS—DRAGLINES

The BUCKEYE TRACTION DITCHER CO., FINDLAY, OHIO

The Buckeye Clipper Convertible Excavator is Buckeye's newest answer to the problem of economical and efficient earth removal.

Builders of Excavating Equipment for over 1/3 of a Century



Drilling rig in Texas coastal field. Natural gas is burned in the boilers.

Oil lines Texas pockets with over one and a quarter million dollars per day!

During the year 1936, Texas received for its 426,000,000 barrels of oil a total of $470,000,000; that figures out at more than one and a quarter million dollars of revenue for each day of the year. And it is a true revenue, for by far the largest part of that money goes into Texas pockets—as wages, as lease and royalty payments, as taxes, for materials, supplies and services.

Production is the major oil activity in Texas. The state contains 50% of the proven oil reserves in the United States; and last year its production was 40% of the total United States figure, which is a little more than the second and third ranking oil states combined.

Manufacturing facilities have a capacity of approximately 70% of production, or of about 925,000 barrels of oil per day. The refineries are scattered, but by far the heaviest concentration is along the coast: in such cities as Port Arthur, Beaumont, Houston, Texas City, Corpus Christi; Houston, for example, has refineries capable of handling 280,000 barrels of oil per day—about 30% of Texas' total refining capacity.

But what does all this mean to you and your industry?

If you are a manufacturer of the equipment and supplies the Texas oil industry uses, it means that it furnishes you with an annual market of about a quarter billion dollars. If you are a manufacturer of articles with a mass appeal, it means that in Texas, oil presents you with a market of about a million people jingling over $300,000,000 per year of wages, lease money and royalties in their pockets.

Oil, however, is only the most important of the Texas resources. Texas also boasts salt, lime, cattle, cotton and cotton linters, sulphur, wool and mohair, vegetables, fruits, clays of various kinds, carbon black, timber, metallic and non-metallic ores. For fuel, there are inexhaustible supplies of natural gas*.

All these resources, including oil, find their chief industrial utilization on the Texas coast. This area is served by first class rail, highway and water transportation facilities; it has a climate which is mild the year 'round; and it offers sound industrial enterprises a hearty cooperation.

Investigate the Texas coast country for your own company. We will gladly assist you: on request we will prepare for you, without cost or obligation, a comprehensive, reliable survey of South Texas, individualized to your company's particular needs. Your request for this service will be kept in strictest confidence. Address Houston Pipe Line Company, Petroleum Building, Houston, Texas.

* Our 650-mile system of natural gas pipelines runs through the heart of the coastal oil country, supplying fuel for drilling, pumping and refinery operations, and for many other industrial uses.

HOUSTON OIL COMPANY
OF TEXAS
Geo. A. Hill, Jr., President

Producers of crude petroleum and natural gas in the following fields

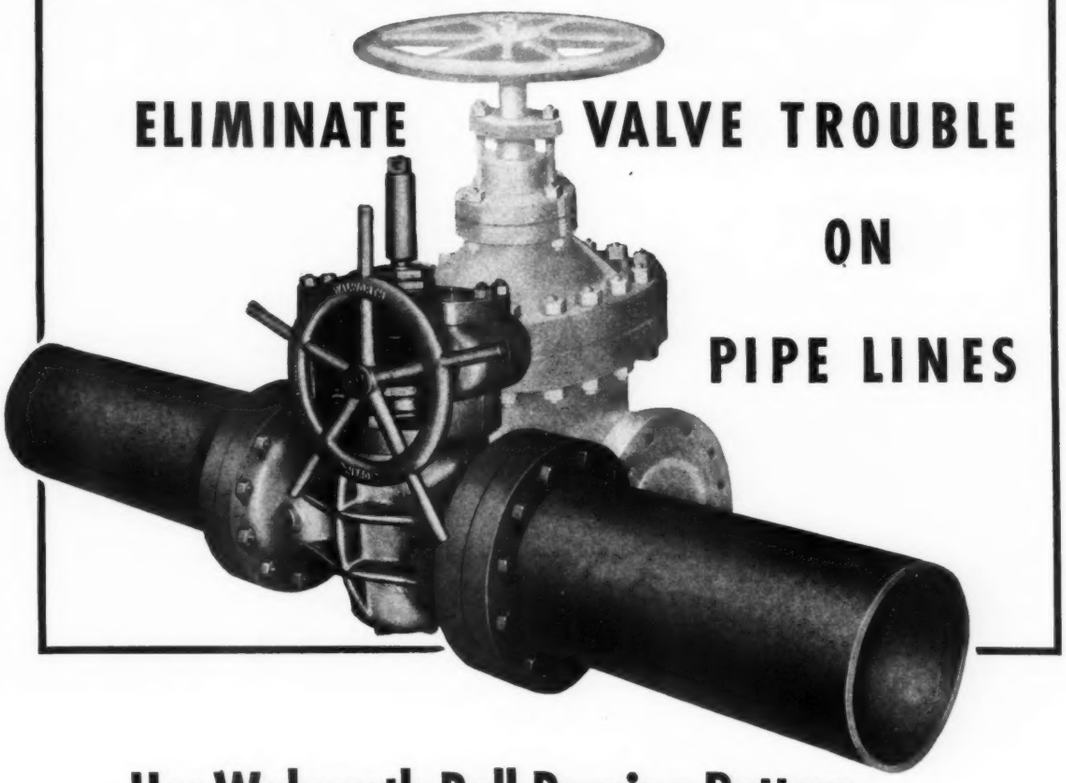
TEXAS

Aqua Dulce	East Texas	North Pettus
Arriola	Eureka	Pettus
Caesar	Hull	Refugio
Carolina-Texas	Lucas	Saxet
Cole-Bruni	McFaddin	Saxet Frio
Conroe	New Refugio	Silsbee
Cosden	New Saxet	Spurger
Dinero	North Kohler	Tomball
West Tuleta		White Point

OKLAHOMA

Cromwell	Seminole-Searight
Cushing	St. Louis-Pearson

HOUSTON PIPE LINE CO.
Subsidiary of Houston Oil Company of Texas
GEO. A. HILL, JR., President
Wholesalers of Natural GAS



ELIMINATE VALVE TROUBLE ON PIPE LINES

...Use Walworth Ball Bearing Pattern

LUBRICATED PLUG VALVES

These valves are the product of many years' experience in the design, manufacture and operation of lubricated plug valves. After exhaustive field tests these valves are now recommended for all services such as are encountered in transmission lines, distribution lines, by-passes, etc.—wherever positive shut-off and ease of operation are desired.

Walworth Ball Bearing Pattern Lubricated Plug Valves are designed to interchange with Gate Valves. They can be furnished to any of the face-to-face dimensions usually encountered in this class of work or to the proposed A.P.I. standard face-to-face dimensions. Specify them for your pipe line jobs!

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 95 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Quick

DELIVERY FROM LARGE STOCKS IN CONVENIENTLY LOCATED WAREHOUSES

WEST TEXAS

LOUISIANA

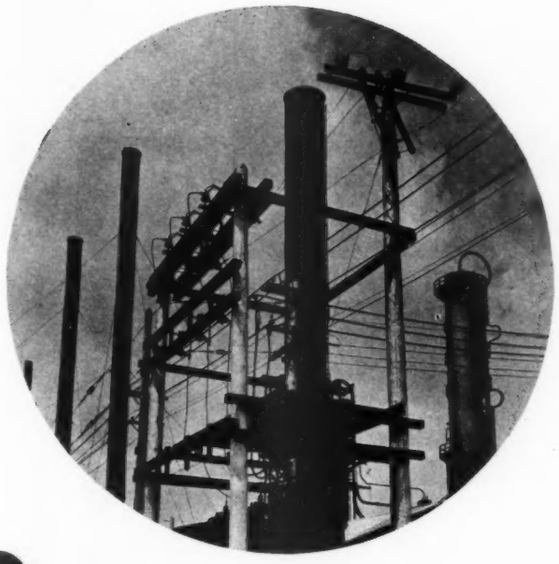
For appreciative, friendly, and speedy service . . . . . ALWAYS CALL THE NORVELL-WILDER MAN . . . . . *first*

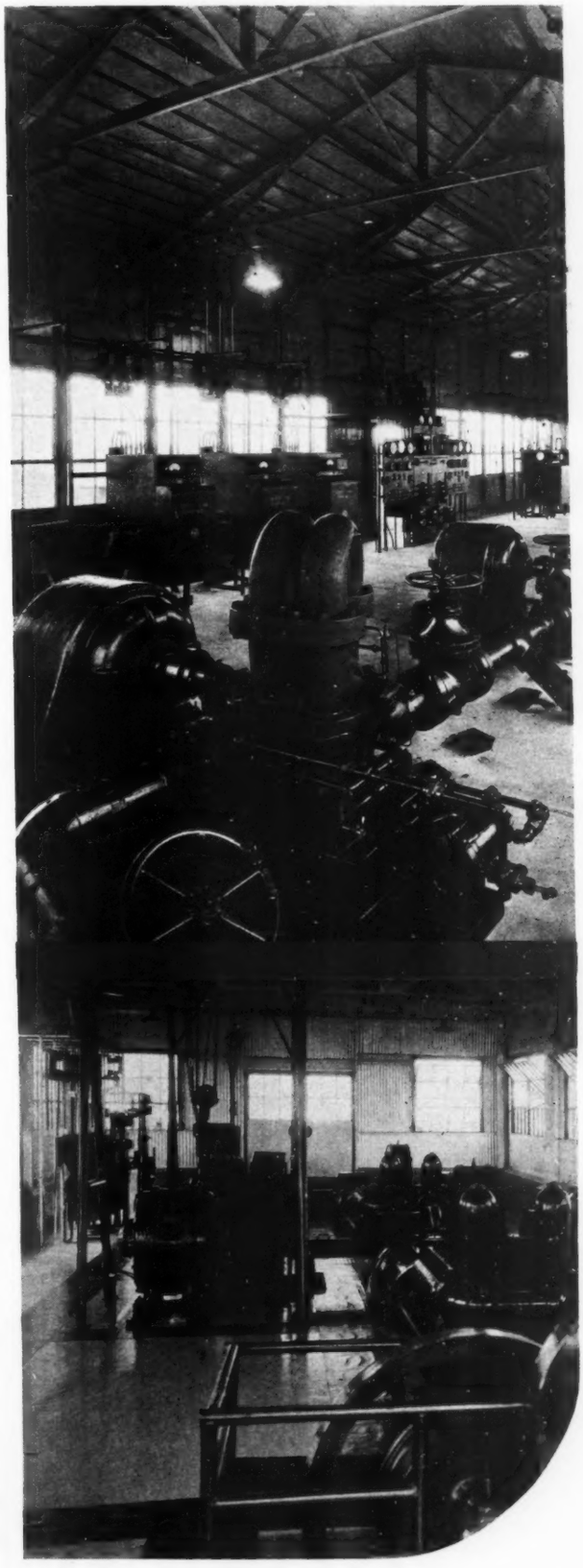
SERVING LEADING OIL COMPANIES AND OPERATORS FOR MORE THAN A QUARTER OF A CENTURY.

GULF COAST

EAST TEXAS

Norvell-Wilder Supply Company





WHEN YOU WANT IT . . . AT A COST WHICH ALLOWS

Bigger Profits

Taxes, insurance and maintenance costs can be practically neglected when you use *Purchased Electric Power* for pipe line, drilling, producing or refining purposes.

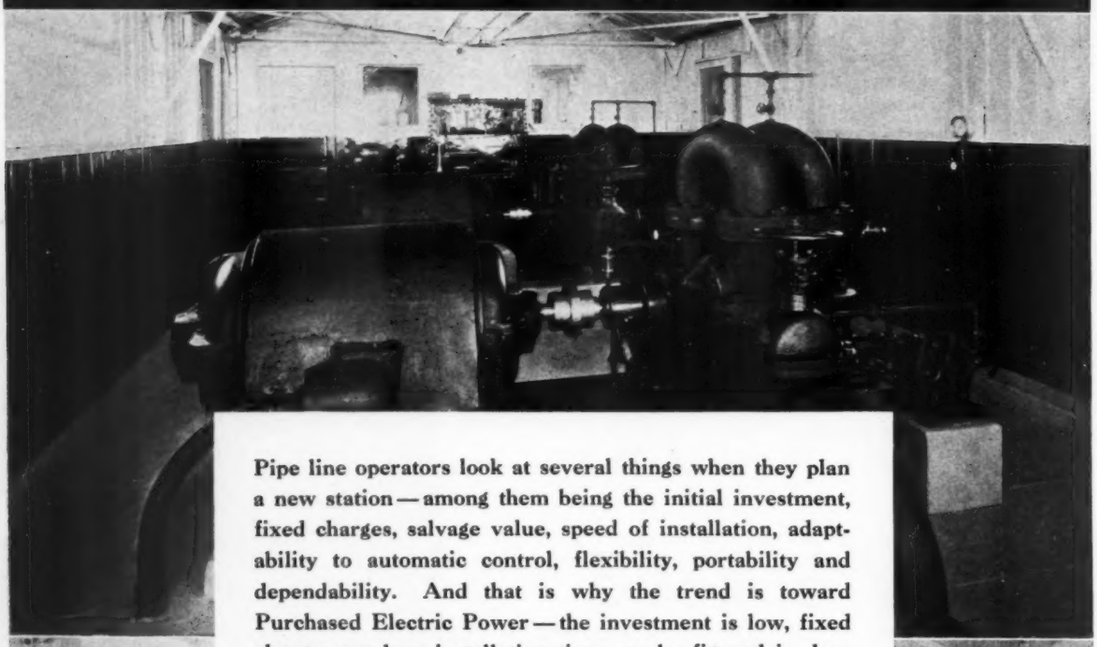
Purchased Electric Power is economical, flexible, dependable, safe, convenient, quiet and clean. Ask your nearest central power service company for FREE consultation of your Electric Power problems.

Purchased ELECTRIC POWER

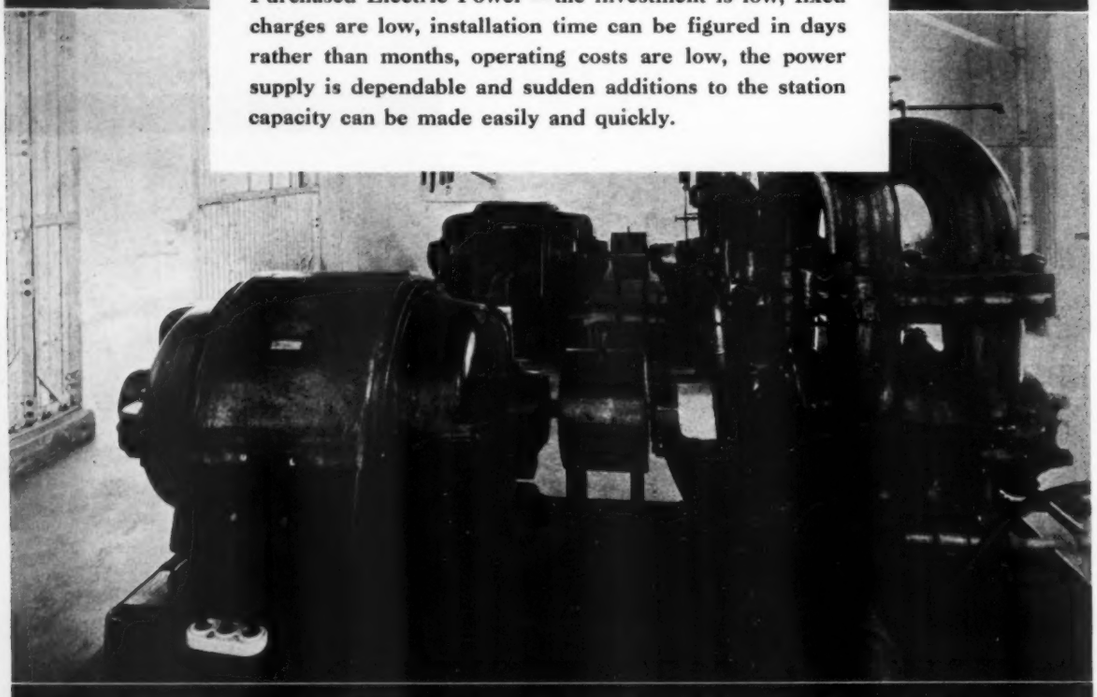
★

PETROLEUM ELECTRIC POWER CLUB

PURCHASED ELECTRIC POWER

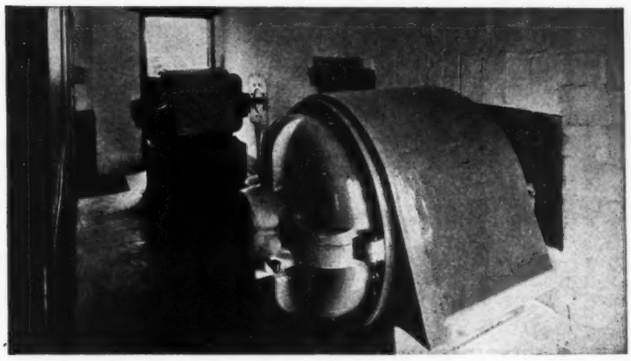


Pipe line operators look at several things when they plan a new station — among them being the initial investment, fixed charges, salvage value, speed of installation, adaptability to automatic control, flexibility, portability and dependability. And that is why the trend is toward Purchased Electric Power — the investment is low, fixed charges are low, installation time can be figured in days rather than months, operating costs are low, the power supply is dependable and sudden additions to the station capacity can be made easily and quickly.



TEXAS ELECTRIC SERVICE COMPANY

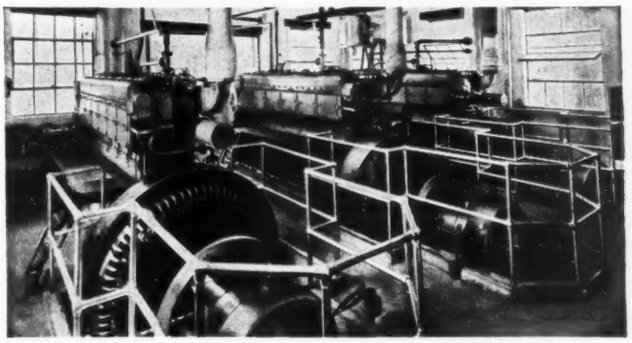
Night & Day THE YEAR ROUND



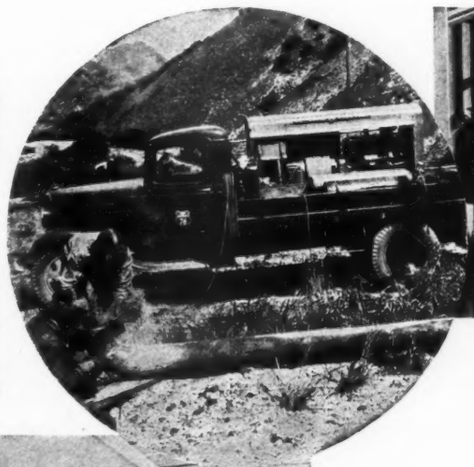
For many centrifugal-pump drives, G-E squirrel-cage induction motors are highly successful. They are famous for their ability to give low-cost service over long periods of time. These two 350-hp induction motors, in a Texas pipe-line pumping station, are driving centrifugal pumps located on the other side of the fire wall

G-E Equipment helps keep the oil flowing

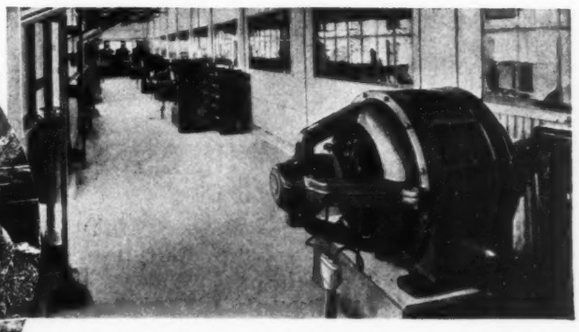
ON this page are typical examples of properly applied, dependable G-E equipment in pipe-line service. It is the equipment that helps keep the oil or gasoline flowing night and day, the year round. G-E engineers will be glad to discuss your particular problems with you, at your convenience. Call our nearest representative for further information. General Electric, Schenectady, N. Y.



Where central-station power is not economically available, the diesel-engine-driven generator is an excellent source of power for pipe-line motors. These three G-E generators are giving dependable service in the same station in which are located the motors illustrated above

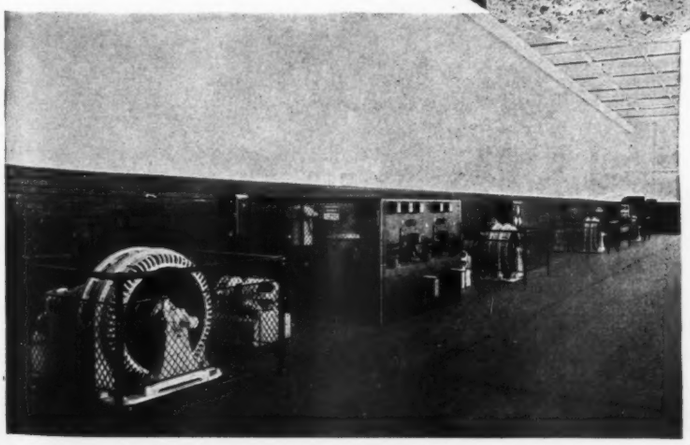


Oil pipe line near San Luis Obispo, Cal., being arc-welded with a G-E gas-engine-driven welder. Miles of pipe can be laid quickly and economically by the use of arc welding. G-E welding equipment makes possible a faster and better job



The high-starting-torque and adjustable-varying-speed characteristics of G-E type MT wound-rotor motors often make them the correct choice for driving large reciprocating pumps. The four G-E wound-rotor motors shown here are driving such pumps at Lima, Oklahoma

Four G-E low-speed synchronous motors driving reciprocating gasoline pumps in a Des Moines, Iowa, pumping station. Besides being highly efficient in operation, synchronous motors can cut power bills because of their power-factor-improvement characteristic



020-344A

GENERAL ELECTRIC

● 20,000 B/D Plunger Pumps and 400 H.P. of Motors 25,000 B/D Centrifugal Pump and 500 H.P. of Motors.

227 MILLION BARRELS OF OIL

. . . PUMPED AWAY IN PIPELINES BY PURCHASED ELECTRIC POWER . . . IN OKLAHOMA CITY FIELDS ! ! !

Yes . . . 227,000,000 barrels of oil, or approximately 65% of the total oil produced in the Oklahoma City fields within the last eight years has been pumped away by *Purchased Electric Power*.

This is more evidence that *Purchased Electric Power* is efficient and economical for pipeline service. Ask us for advice on your problems! There's no obligation.

● 25,000 B/D Pump and 350 H.P. Motor pumping Oklahoma City crude.

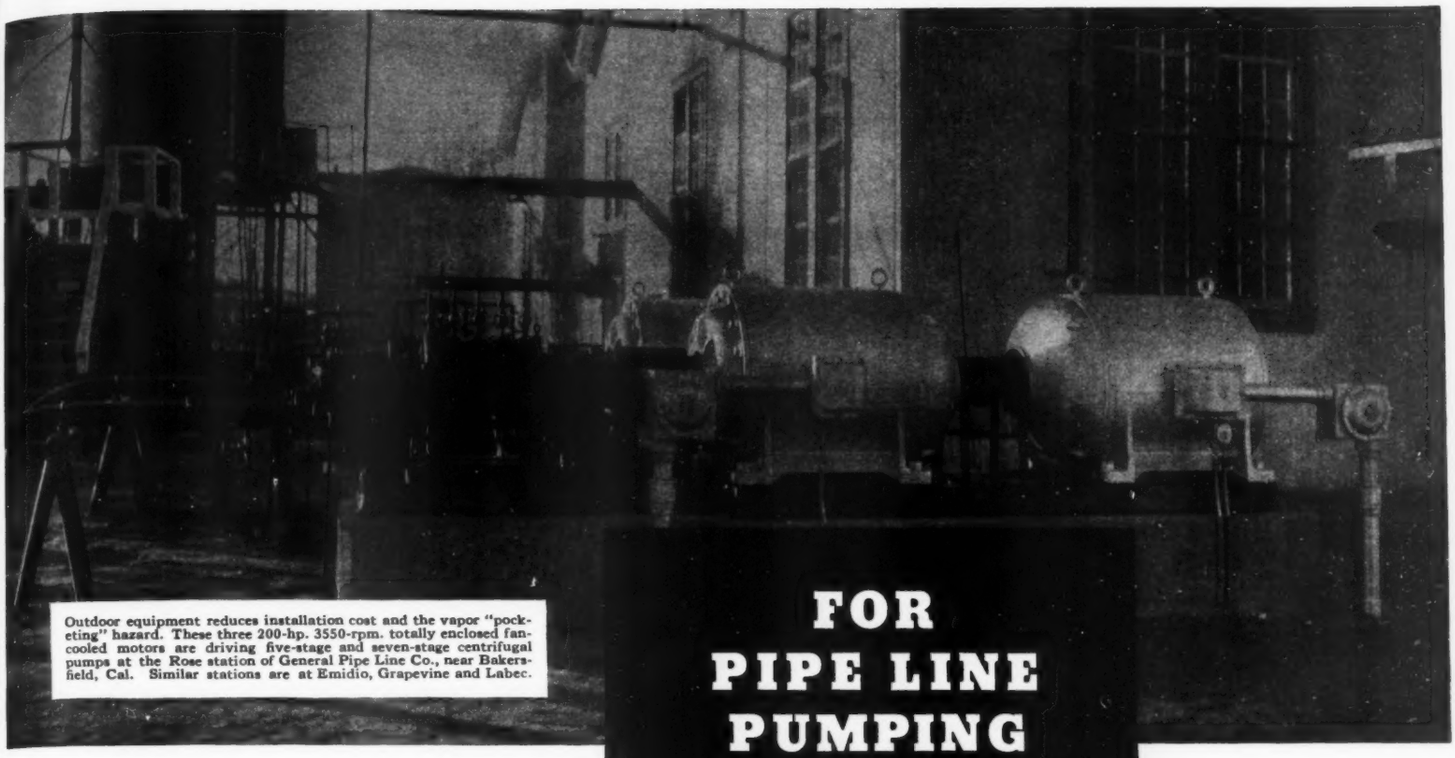
● 25,000 B/D Pump and 500 H.P. Synchronous Motor

PROFIT! BY USING Purchased ELECTRIC POWER

OKLAHOMA GAS AND ELECTRIC COMPANY

Commercial Department

OKLAHOMA CITY — W. H. STUEVE — OKLAHOMA



Outdoor equipment reduces installation cost and the vapor "pocketing" hazard. These three 200-hp. 3550-rpm. totally enclosed fan-cooled motors are driving five-stage and seven-stage centrifugal pumps at the Rose station of General Pipe Line Co., near Bakersfield, Cal. Similar stations are at Emidio, Grapevine and Labec.

FOR PIPE LINE PUMPING

motor drive ENGINEERED *to the job*

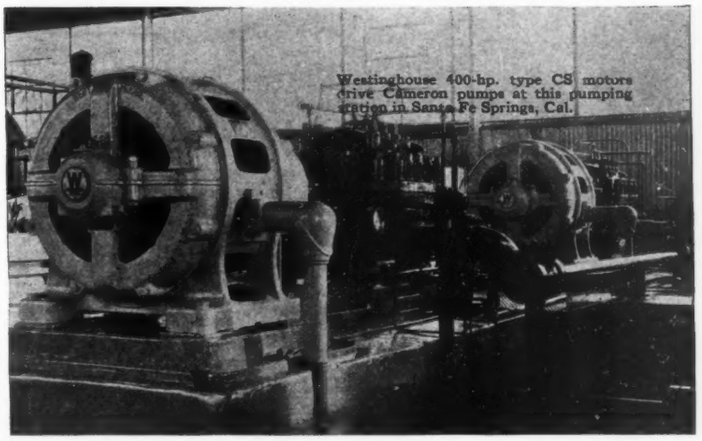
Westinghouse brings an intimate knowledge of oil industry problems to the task of supplying your complete electrical requirements.

★ ★ ★

For pipe line pumping, as an example, Westinghouse motor drive is *engineered* to the job. Service requirements are met by the right motor in the right place. Open, splash-proof, pipe-ventilated, fan-cooled and explosion-proof forms are available, according to the needs of the job. Convenient and reliable operation is assured by Westinghouse control, designed to meet the exact needs of the job.

Westinghouse quality and service back up engineering knowledge with products that give complete satisfaction. There is a Westinghouse representative near by who will gladly discuss your problem without obligation. J 93277

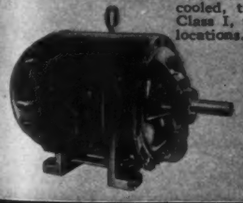
Westinghouse Electric & Mfg. Co., East Pittsburgh, Penna.



Westinghouse 400-hp. type CS motors drive Cameron pumps at this pumping station in Santa Fe Springs, Cal.

FROM DRILLING RIG TO SERVICE STATION

DRILLING ● PUMPING ● PIPE LINES ● TANKERS ● REFINERIES ● SERVICE STATIONS

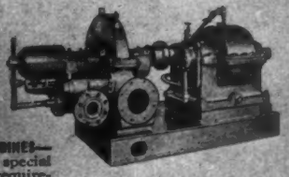


EXPLOSION PROOF MOTORS—Fan-cooled, totally enclosed, for Class I, Group D hazardous locations.

NEW OIL IMMERSED CONTROL—For motors in locations subject to explosion hazards or corrosive atmospheres.

NEW OIL IMMERSED PANELBOARDS—Provide Nofuse protection for lighting and small power circuits. Explosion-proof and corrosion-resisting.

"DEI-ON" LINESTARTERS—Dust-tight, water-tight cast iron enclosures for outdoor locations.



MECHANICAL DRIVE TURBINES—Adaptable for many special pipe line pumping requirements.

Specify **Westinghouse**

STAVE OFF OLD AGE!

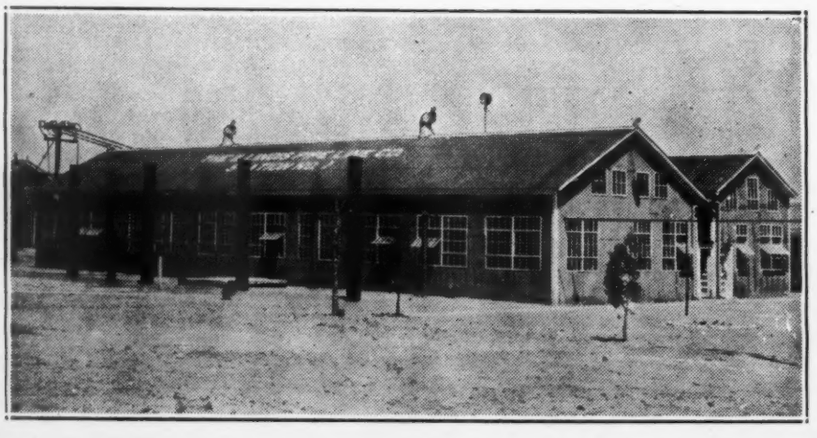
It's Not the Gray at Your Temples,
Nor the Crowsfeet at Your Eyes---
But When Your Company Makes Contracts
Your Business Can't Stand.....
You're Over the Hill, Boy,
You're Over the Hill.

IT'S CONTRACTS FOR PRIVATELY-OWNED, SMALL AND EXPENSIVE ISOLATED POWER PLANTS THAT BRING ON OLD AGE.

BUY ELECTRIC POWER--SEE THE RESULTS!

NO WORRY
NO TROUBLE
NO SUPPLIES
NO TAXES
NO INSURANCE
NO OPERATING LABOR
NO SHUTDOWNS
NO HIDDEN COSTS
NO DEPRECIATION
NO WATER PROBLEMS
NO MAINTENANCE
NO BROKEN CRANK SHAFTS
NO OIL
NO CRACKED HEADS
NO WASTE

THIS PIPELINE COMPANY HAS ENDORSED BOUGHT ELECTRIC POWER:



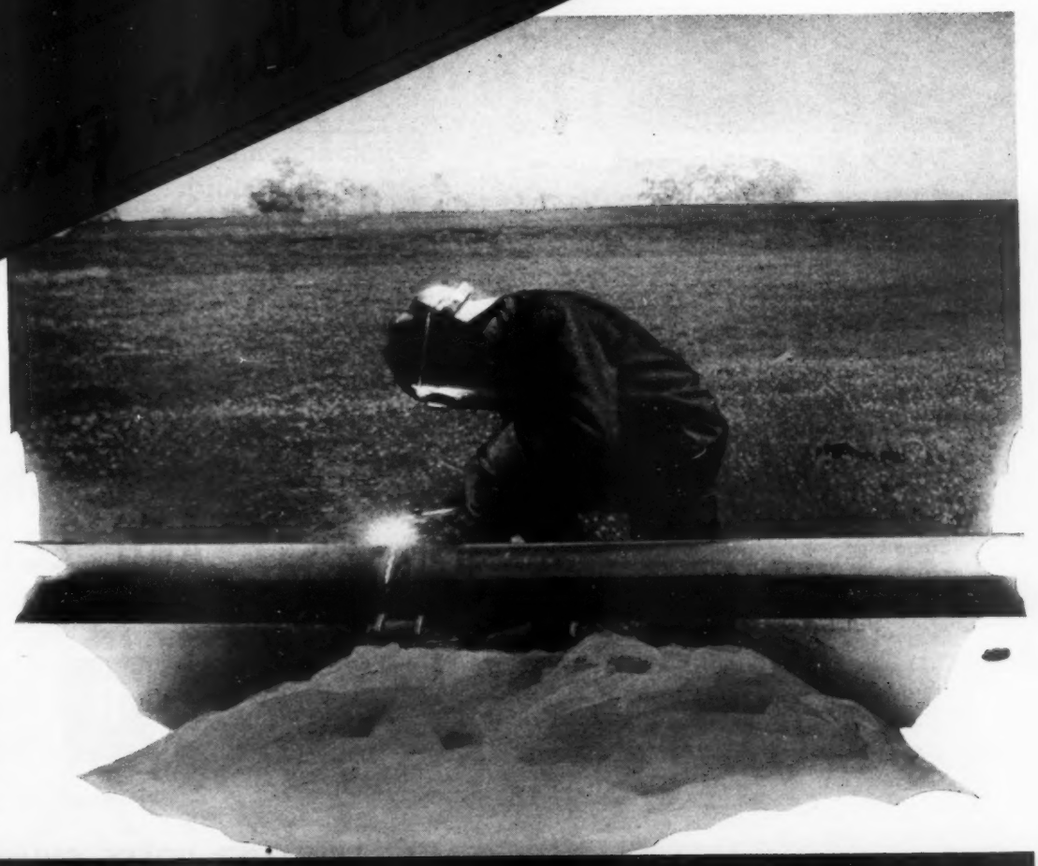
West Texas Utilities Company

cate the quality of this complete welding and cutting service

Welding Oil Well Casing

Where the job requires an all-position, high tensile rod suitable for single or multiple passes, WILSON or AIRCO "CASING ROD" is recommended. Low splatter, full fillets, economical.

The photograph shows Mulligan Welding Service Corp., of Houston, welding surface casing.



ROLL WELD ELECTRODES

WILSON and AIRCO "ROLL WELD" electrodes have been especially developed for roll welds on pipe. They possess excellent penetration with elongation greater than ordinarily required for most work. Fast rods, they permit maximum deposit free from slag interference and porosity. Smooth beads coupled with high tensile and ductility distinguish the roll welds made with these rods.

The photograph shows a roll weld being made on a six-inch gasoline line using Airco "ROLL WELD" electrodes.

SALES COMPANY

GENERAL OFFICES: 60 EAST 42ND STREET, NEW YORK, N. Y.

W-K-M

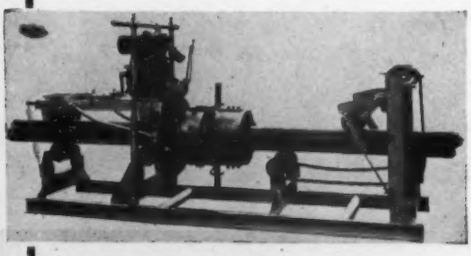
TRAVELLING

W-K-M Model "B" Travelling Type, Cleaning and Priming Machine.

W-K-M Model "F" for Cleaning and Priming.

OR STATIONARY

Same Model "B" set in Stationary Base for Stationary Cleaning.



Same Model "F" in Stationary Base for Yard Work.

PIPE CLEANING MACHINES

•

Continuous development coupled with thousands of miles of experience have made these machines standard all over the world for pipe cleaning.

New pipe, where coated for protection against corrosion, should first be well cleaned, before application of protective coating.

Old pipe should be properly cleaned for inspection of condition, before welding or reconditioning.

These machines can be equipped with knives for removal of old coating and wrapping; also with primer head for the application of primer, or cold paint, or grease coatings. Write us for details.

W-K-M CLEANING MACHINES DO THIS JOB FAST AND ECONOMICALLY

CRC

CRUTCHER-ROLFS-CUMMINGS-INC.

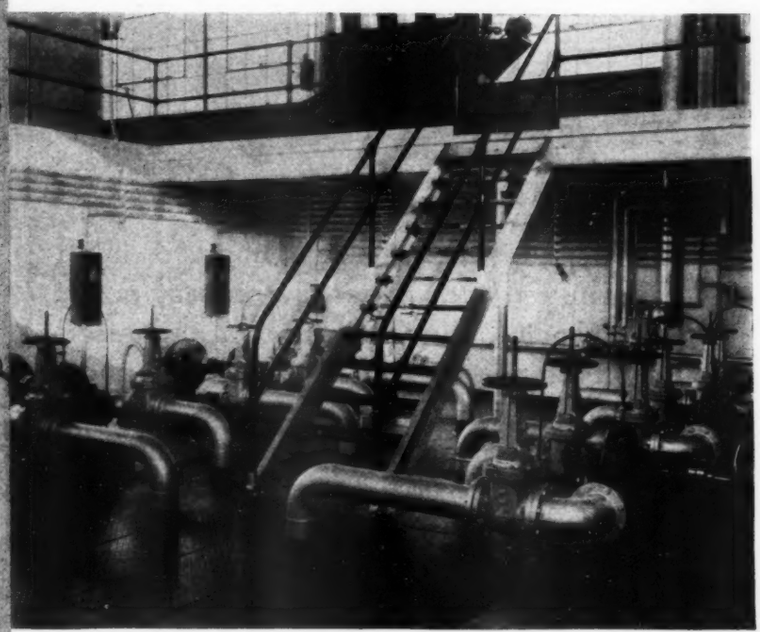
Specializing in

PIPE LINE EQUIPMENT AND MATERIALS

HOUSTON, TEXAS U.S.A.

ACROSS THE MILES AND THROUGH THE YEARS

The Quality of Crane Pipe Line Valves Has Been Proved on America's Outstanding Lines

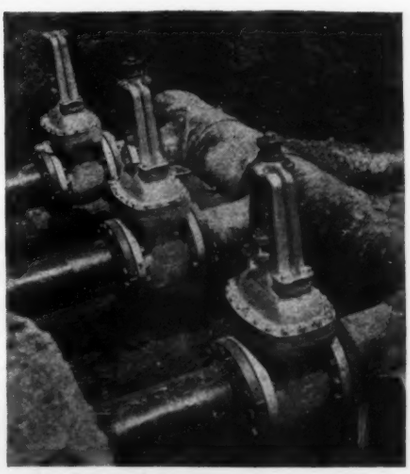


(*Above*) A typical Crane compressor station installation on one of the new and important pipe lines. Photo shows Crane Valves and Welding Ells. Similar equipment was installed in nine such stations on a recently constructed section of this line.

(*Right*) Crane Gate Valves on a typical river-crossing header. On this line, CranEquipment has been used for main line valves, by-passes, river crossings—wherever there was need for positive control of flow.

● Crane Valves can be bought on the basis of proved quality—on the record of faithful, economical service rendered by Crane Valves on many of the nation's leading lines. In hundreds of compressor stations, by-passes, river crossings—at every point where positive service is important, you'll find Crane Valves.

And for every service, Crane engineers have collaborated with the petroleum industry's own technicians to provide valves specifically suited for the service required. Your own copy of the Crane No. 52 Catalog is a guide to the most modern valves for pipe lines—and for every need of the industry. Consult it in ordering CranEquipment that will stay on the job.



CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, PLUMBING AND HEATING MATERIAL

Tough!

The men who make Youngstown oil country goods never saw an easy-going inspector. They've been born and raised on standards of precision that most people would call impossible, and that is why their pipe works with you on the job and not against you -- -- why it is easier to use, always the same, always a help toward a fast and profitable job of drilling, pumping or line laying.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - YOUNGSTOWN, OHIO

OIL COUNTRY TRADE MARK YOUNGSTOWN TUBULAR GOODS

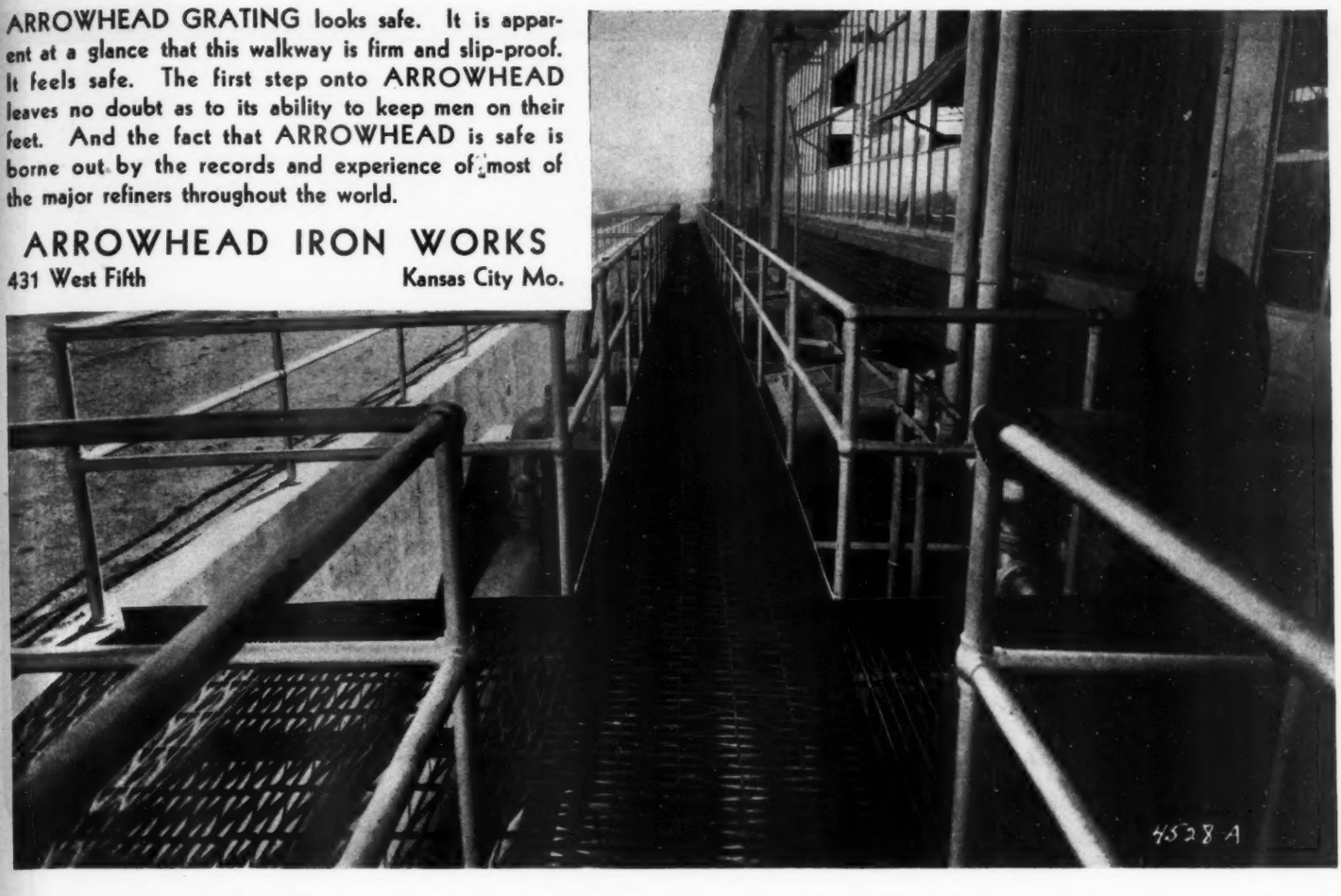
Youngstown's pipe is distributed by --

The Continental Supply Company, Dallas, Texas
Continental Emsco Co., Inc. 30 Rockefeller Plaza, New York City
Republic Supply Co. of California, Los Angeles

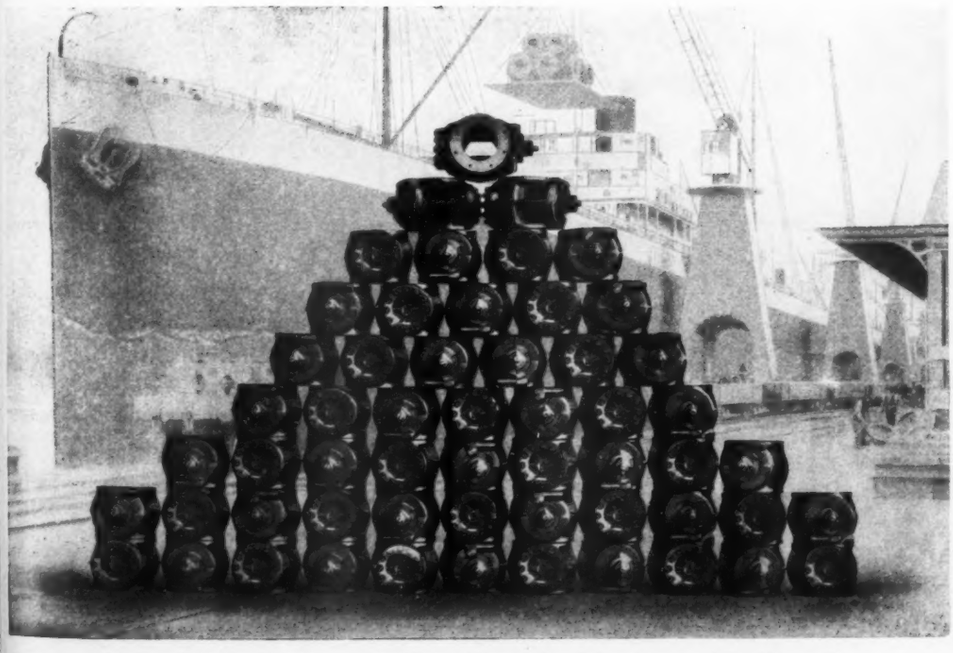
2-5

ARROWHEAD GRATING looks safe. It is apparent at a glance that this walkway is firm and slip-proof. It feels safe. The first step onto ARROWHEAD leaves no doubt as to its ability to keep men on their feet. And the fact that ARROWHEAD is safe is borne out by the records and experience of most of the major refiners throughout the world.

ARROWHEAD IRON WORKS
431 West Fifth Kansas City Mo.



NEWMAN-MILLIKEN GLANDLESS LUBRICATED PLUG VALVES



Group of 56 8-inch Newman-Milliken Valves being shipped to an Australian order

NOTE THEIR UNIQUE FEATURES:-

- PARALLEL PLUG—ALWAYS IN CLOSE WORKING CONTACT WITH ITS BODY SEATING, NO GRIT CAN THEREFORE GET BETWEEN THESE TWO SURFACES.
- NO GLAND—NO PACKING—NO GASKETS.
- SELF SEALING
- VISUAL CHECK ON FULL LUBRICATION
- PORT OPENINGS EQUAL TO FULL SIZE PIPE AREA.
- OPENED AND CLOSED BY QUARTER TURN OF PLUG.

Newman, Hender & Co. Ltd
WOODCHESTER, GLOS. ENGLAND.

WILLIAMS BROTHERS CORP.

CHICAGO—TULSA—HOUSTON

●

GENERAL CONTRACTORS

PIPE LINES

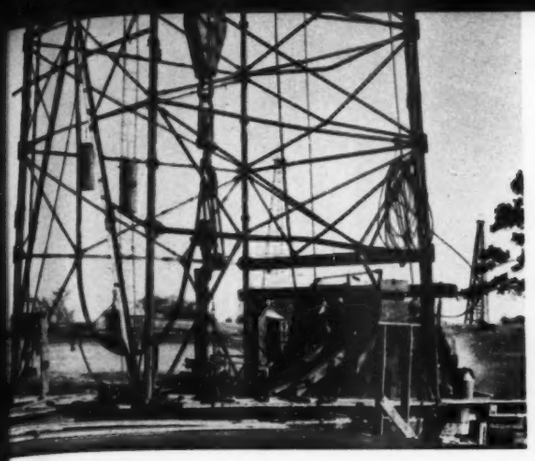
OIL—GAS—GASOLINE—WATER

CONSTRUCTION AND RECONDITIONING

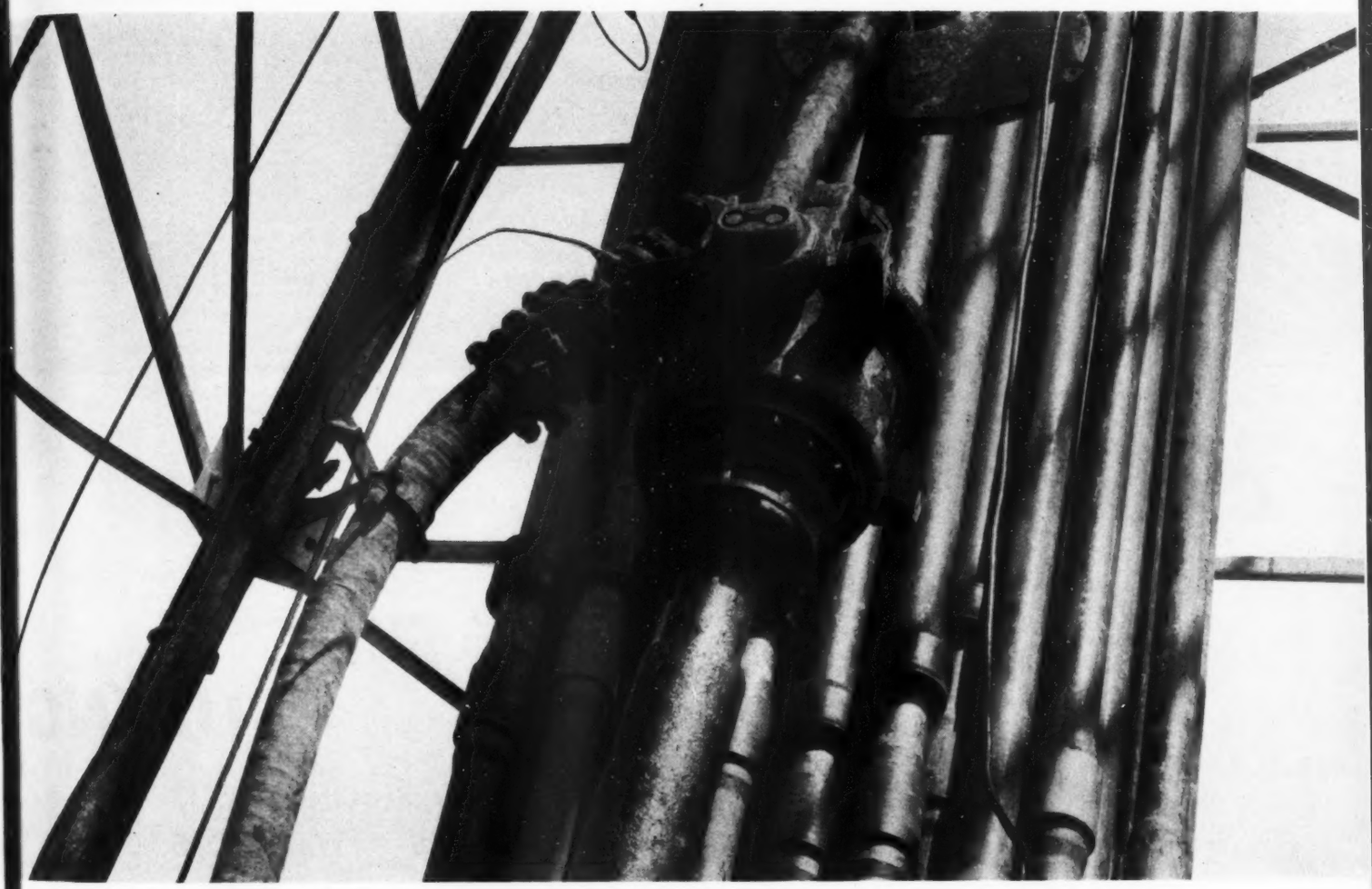
●

APEX CONSTRUCTION COMPANY
HOUSTON, TEXAS

WILLIAMS BROTHERS & HAAS, INC.
SAN FRANCISCO, CALIF.



HIGH PRESSURES



High pressures . . . 7,000 pounds . . . 8,000 . . . even 9,000 . . . for that kind of service, it's good to know that HEWITT Rotary Hose is on the job. But that's the way HEWITT Rotary Hose is built—special construction for protection against severe pressures, and amazing stamina to fight off gruelling abuse. Elongation is reduced to an absolute minimum, but we have kept the flexibility we know you need. HEWITT Rotary Hose can be had with an enlarged end construction, reinforced, and that's a great feature. The nipple is accommodated without sacrificing a single bit of the diameter. Features like this plus the rugged strength and longer life that are built into HEWITT Rotary Hose, make men who know the value of the best, prefer HEWITT. Brass tack figures will prove to your complete satisfaction the superiority of HEWITT Rotary Hose.

HEWITT
RUBBER CORPORATION
BUFFALO, NEW YORK

HOSE • CONVEYOR AND TRANSMISSION BELTS • PACKING

SEAMLESS A.P.I.

CASING
DRILL PIPE
LINE PIPE
TUBING

GAS AND WATER PIPE TO ALL STANDARD SPECIFICATIONS
TANKS, RIVETED OR WELDED • TANK CARS • WIRE ROPE
DERRICKS • CRACKING EQUIPMENT • STEEL SHEET PILING
DRUMS • TIN PLATE • REFINERY STRUCTURAL STEEL WORK

SOLE U. S. A. DISTRIBUTORS

East of the Rocky Mountains

STEEL UNION-SHEET PILING INC.
75 West Street
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EXCLUSIVE U. S. A. AGENTS
of the
ROEHREN-VERRAND, G. M. B. H.
(Tube Syndicate)
DUSSELDORF, GERMANY

Pacific Coast

STEEL UNION INC.
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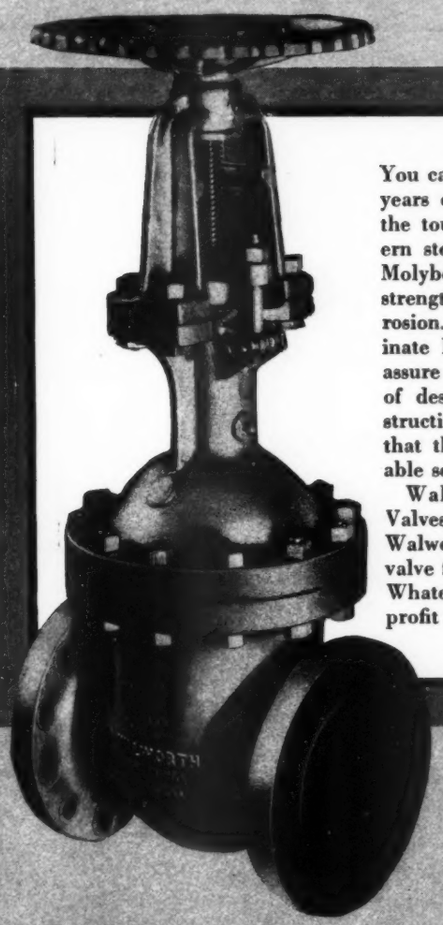
Los Angeles, Calif.

THE LATEST IN...

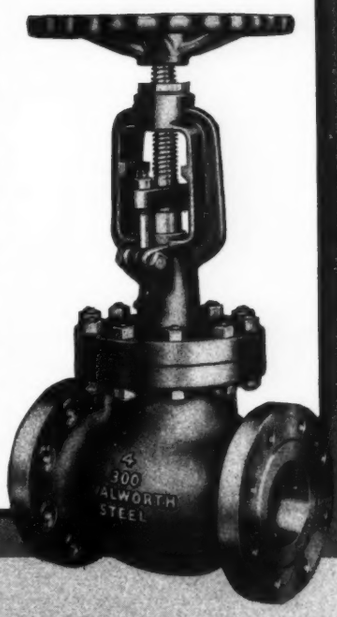
STEEL VALVES

. . . Tough, Wear-Resistant and Reliable



You can assure many additional years of trouble-free service on the tough jobs with these modern steel valves. Heavy Carbon Molybdenum Steel Walls assure strength and compensate for corrosion. Deep stuffing boxes eliminate leakage. Streamline ports assure better flow. Every detail of design, metallurgy and construction emphasizes the fact that they are built for dependable service.

Walworth Series 300 Steel Valves give added support to the Walworth policy: "The correct valve for any and every service." Whatever your need . . . you will profit by specifying Walworth.



Walworth Series 300 Steel Gate Valves give visible evidence of strength and ability to resist wear. They have streamlined ports for better flow, deep stuffing boxes, oversize stems—everything to qualify as "the latest in Steel Gate Valves".

Walworth Series 300 Steel Globe Valves have ball shaped or plug type discs, deep stuffing boxes, two-piece swing type gland bolts, flange type seat rings and many other features that assure long life and positive operation.

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 93 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription prices: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.

COMPLETELY PORTABLE

1,000 TO 5,000 FEET DRILLING

BUILT IN THREE SIZES

1,000 TO 10,000 FEET SERVICING

DELIVERY IN 10 DAYS

SPECIAL FEATURES:

All Wearing Parts Heat Treated.

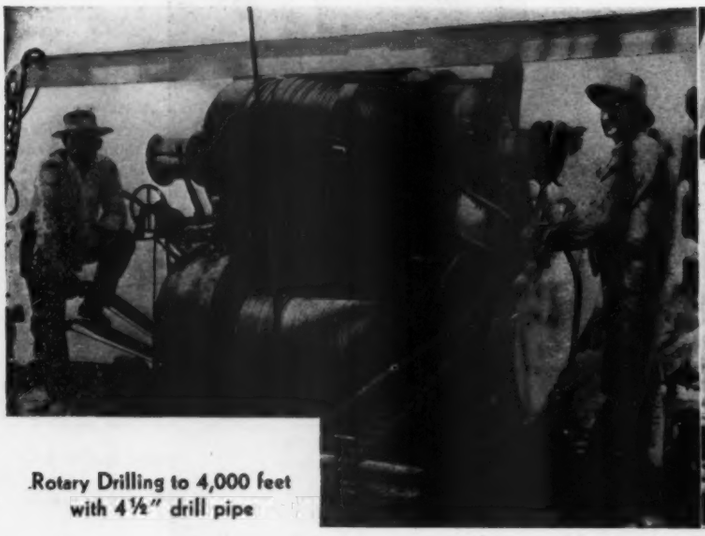
Both Drums Friction Driven from Countershaft.

Both Drums Free Rolling on Timken Bearings, Internally Oiled.

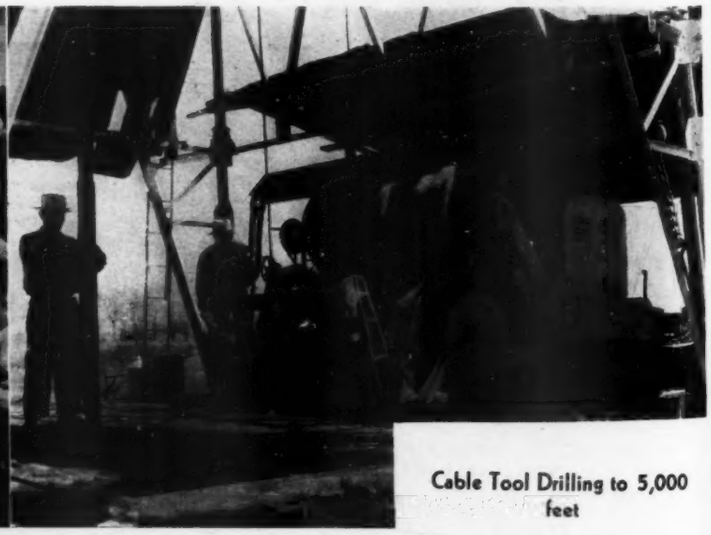
HOUSTON OCTOBER 11-16-1937
SEE OUR EXHIBIT
OIL WORLD EXPOSITION

WE HAVE IT!

A Convertible Unit for Rotary or Cable Tool Drilling and Rotary or Cable Tool Servicing. ONE machine to perform FOUR jobs.



Rotary Drilling to 4,000 feet with 4½" drill pipe



Cable Tool Drilling to 5,000 feet

CARDWELL ALL STEEL
REG. U. S. TRADE MARK PAT. OFFICE
THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

ALLSTEEL PRODUCTS MFG. CO.
Wichita, Kansas, U. S. A.
801 So. Wichita St., P. O. Drawer 2001
CABLE ADDRESS "ALLSTEEL" PHONES L. D. 289, LOCAL 4-4381—4-4389

SEE PAGES 83-84-85-86 1937 ISSUE

Our Catalog is filed in the COMPOSITE CATALOG

This Fatigue machine

has made it possible for Macwhyte to produce tougher, stronger wire lines

• There are only a few of these machines in America. With this Haigh Robertson Fatigue Testing Machine, Macwhyte can measure quickly the resistance which the wire offers to repeated bending stresses. Constant experiments with this machine have helped Macwhyte to develop wire with a higher fatigue resistance. This operation is typical of Macwhyte's policy of producing only high quality wire. Constant research is one of the many reasons why Macwhyte PREformed Wire Lines give such good service.

"Meet Us at the Oil World Exposition Houston, Texas, Booth 1215

OIL FIELD DISTRIBUTORS: Eastern Fields—Baldwin Supply Company; Bradford Supply Company; Franklin Tool Company; Logan Foundry & Machine Company; Washington Mould, Machine & Foundry Co. **Mid-Continent Fields**—Bradford Supply Company; Carson Machine & Supply Company; The Drillers Supply Co.; Dunigan Tool & Supply Co.; East Texas Tool & Supply Co.; United Supply & Mfg. Co.; The Western Drilling Tool & Supply Co.; El Dorado Foundry, Machine & Supply Co.; The Federal Supply & Machine Co.; Superior Iron Works, Inc.; Western Supply Company • **California Oil Fields**—California Machinery & Supply Company **Mountain States**—Intermountain Belting & Packing Co. • **Mexico**—General Machinery & Supply Co., S.A. Tampico

MACWHYTE
PREformed
WHYTE STRAND
WIRE LINES
... INTERNALLY LUBRICATED

Macwhyte PREformed WHYTE STRAND Wire Lines are specially designed for jobs where lines must stand up under severe bending. Specially designed lines include rotary lines, swabbing lines, casing lines, tow lines, tubing lines, winch ropes, sucker rod lines and fall lines. Macwhyte also makes specially designed non-preformed wire lines for the oil fields. All made in accordance with API specifications.

NO. 307-A

MACWHYTE COMPANY, Kenosha, Wisconsin

Manufacturers of wire lines and braided wire rope slings

Distributors and stocks throughout the oil fields for quick service

"Licking THE WORST TRUCKING CONDITIONS in the World"

Here in vivid description is what an old-timer in the oil fields thinks about INTERNATIONAL TRUCKS. He writes as follows:

"For years I have read your ads about 'Internationals' and they don't begin to tell the story. You fellows should make a trip down here to see what it is all about. Most of the oil wells here are located in the swampy lowlands, in black, sticky gumbo mud. Big, heavy machinery must be brought to the well locations. Boys, unless you see this it is hard to believe. Sometimes it takes three to four hours to make two to three miles. You should see your big Internationals take on the job. Make a few feet, back up, and hit it again. Tear into it. To stop means your truck and load will sink. Boys, this is a fight you should see. You have a truck that asks no odds, only the gas.

"Now all I ask of you fellows is to get a bit louder and tell the world you have the champion of trucks — a truck that doesn't know the meaning of the word 'quit'. Now my friends, all this is coming from a bystander with years of experience with trucks — including eighteen months with the transport in France, where I thought we had tough going. But this place has shell holes licked a mile, and your Internationals are licking the worst trucking conditions in the world.

"No offense is meant by this little panning; I had to get it off my chest. I am simply a friend and rooter for what I think is *the finest piece of machinery with wheels on it.*"

* * *

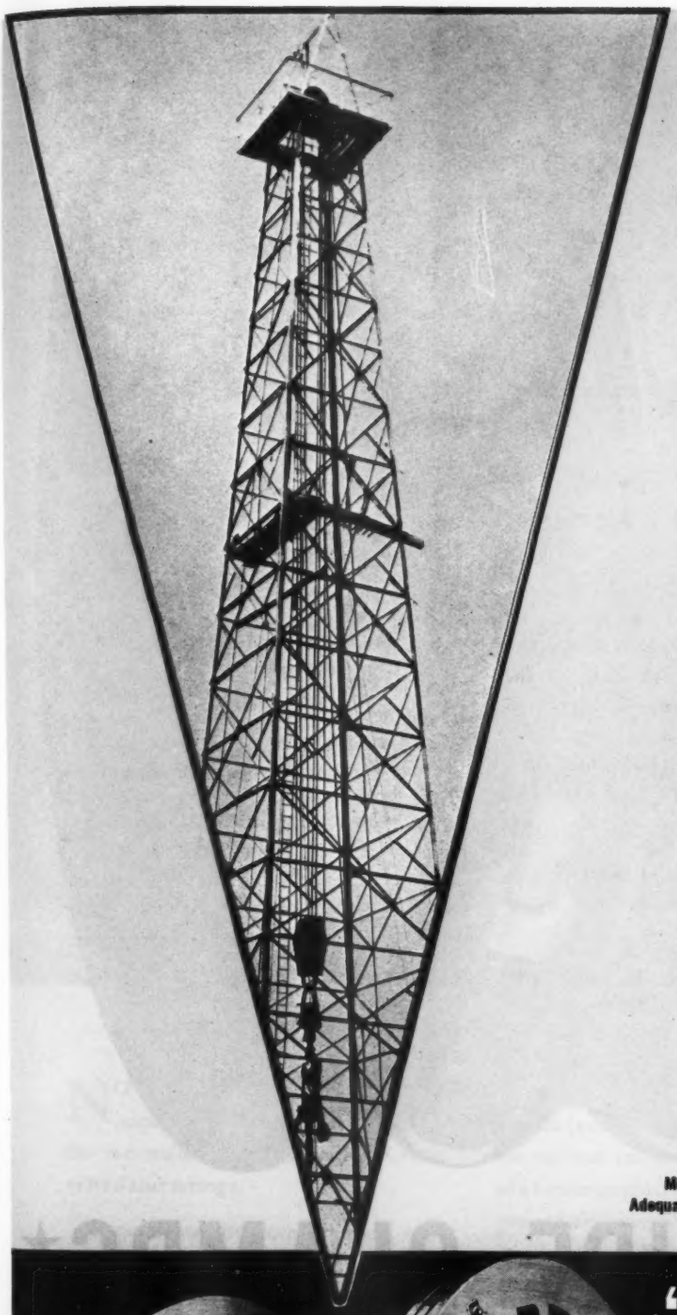
Mr. TRUCK OWNER — there is a splendid new complete line of International Trucks on the market now — *new* in external beauty, *new* in engineering throughout. A line of ALL-TRUCK trucks — 26 models in 79 wheelbases — from Half-Ton to powerful Six-Wheelers. See the new Internationals at any International dealer or branch showroom.

INTERNATIONAL HARVESTER COMPANY
(Incorporated)
Harvester Building Chicago, Illinois

International Dual-Drive Six-Wheeler heading into location with draw-works. Total gross load approximately 53,000 pounds. For hauling boilers, engines, drums and winches, and other heavy machinery into roadless territory, depend on International Trucks.

INTERNATIONAL

INTERNATIONAL TRUCKS



You Can't Figure The Drilling Cost In Advance

But you can save a lot of that cost in advance by using a "Flex-Set" Preformed Yellow Strand Rotary Line.

Long before preforming was developed, regular Yellow Strand was well recognized as "the tops" among rotary lines. It always saved drilling costs because of its amazing toughness and long life.

Permanently preforming the wires and strands to the helical form they occupy in the finished rope further lengthens its already long life. Internal stress is greatly reduced. The rope is more flexible; easier to handle and install; remarkably resistant to drum crushing and fatigue.

"Flex-Set" Preformed Yellow Strand is reducing drilling costs in every rotary field. Try it!

Broderick & Bascom Rope Co., St. Louis
Factories: St. Louis, Seattle, Peoria
Houston Branch: 1311 Palmer St., Houston, Tex.

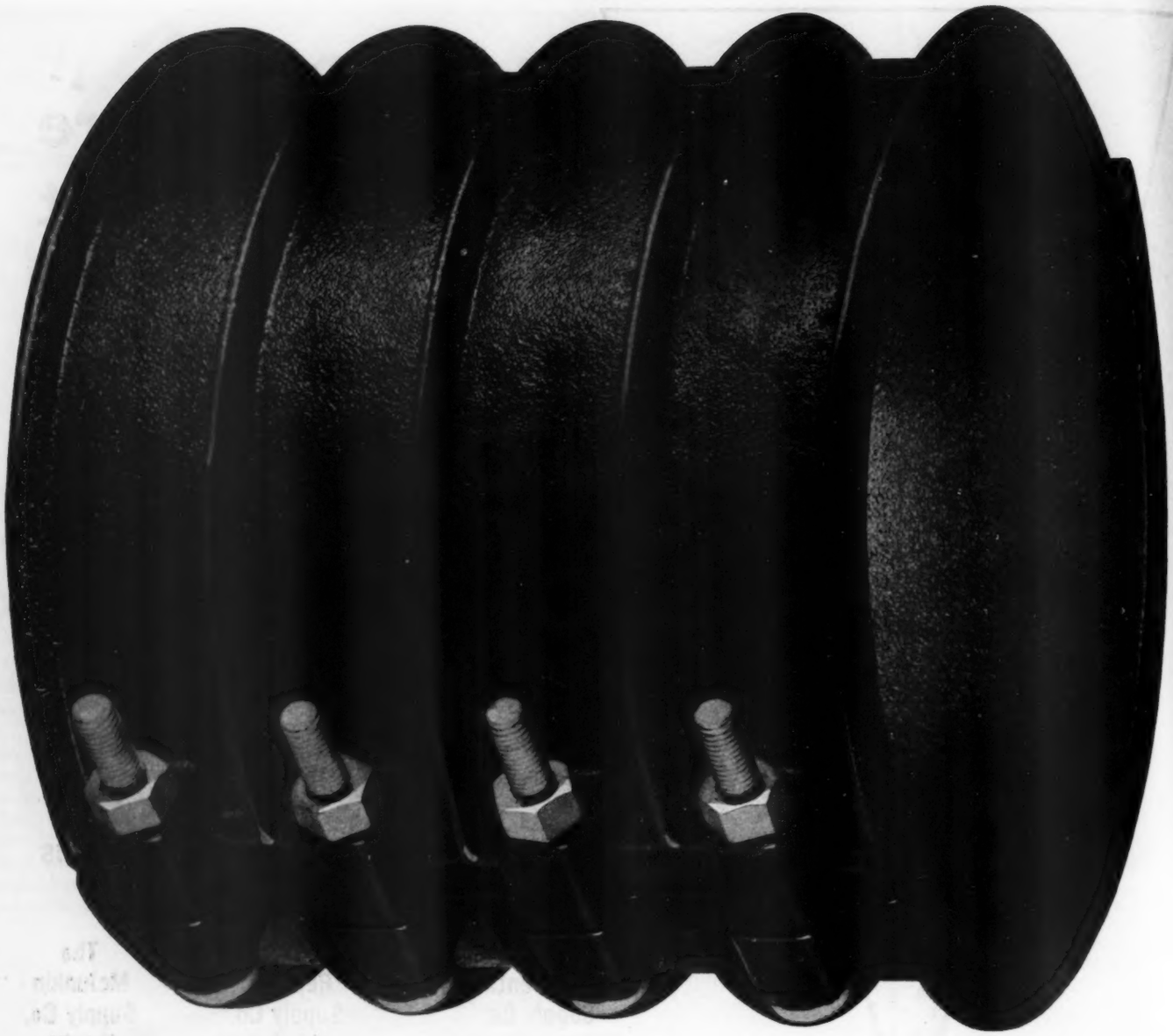
The Continental Supply Co.
Mid-Continent Distributors
Adequate Stocks in All Active Fields

The Republic Supply Co.
of California
Oil Field Distributors for California

The McJunkin Supply Co.
Charleston, West Virginia

V-11

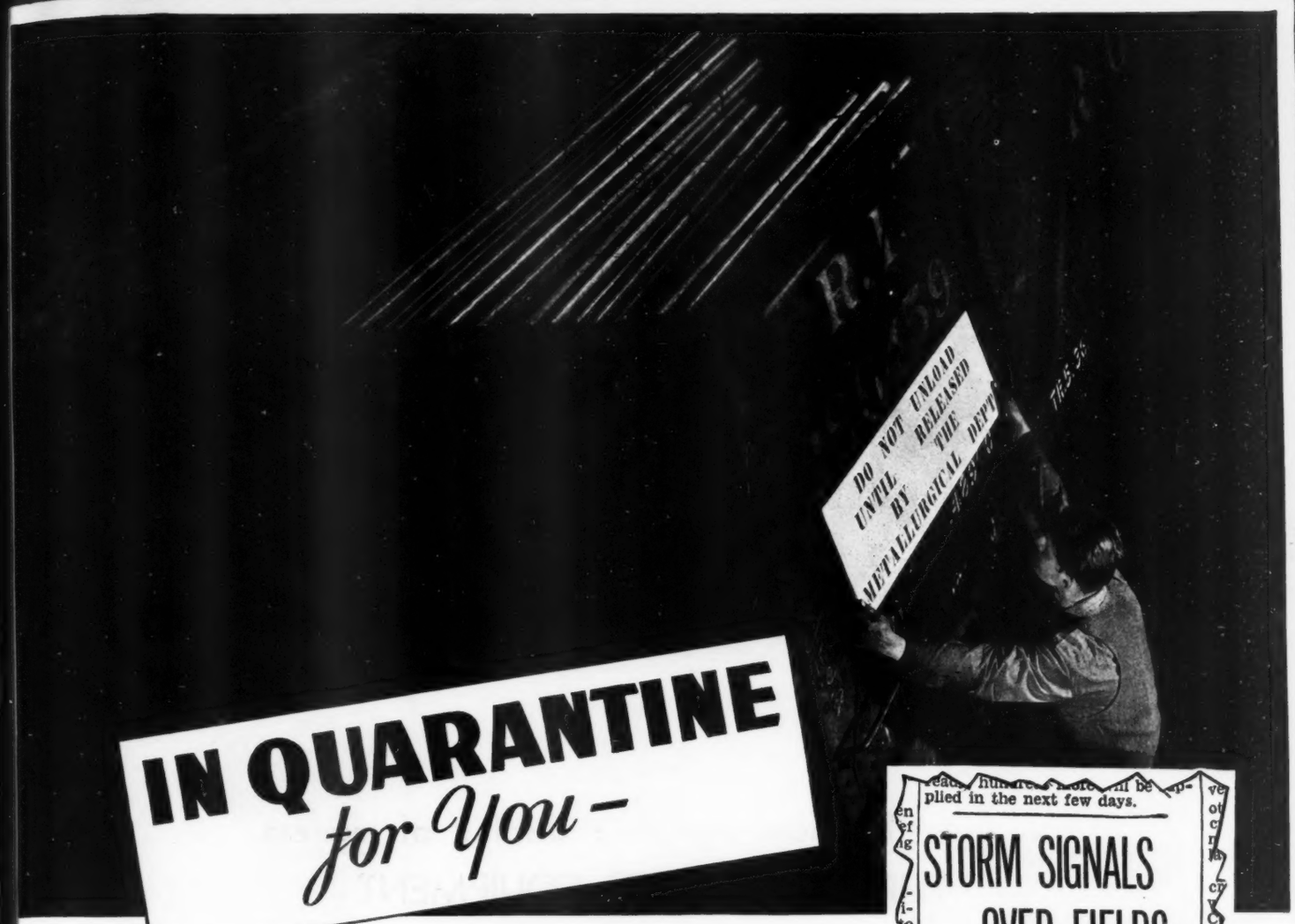
"Flex-Set" Preformed YELLOW STRAND ROTARY LINES



EMERGENCY PIPE CLAMPS★

★ for stopping leaks in pipe lines — instantly, permanently! The standard clamp of the industry for 40 years. In stock at all supply stores.

M. B. SKINNER CO. *Est. 1898* **SOUTH BEND, IND.**



IN QUARANTINE *for You—*

NO immigrants anywhere ever get a more searching examination than do the materials ordered for Crane valves and fittings.

Though bought from the most reliable sources according to rigidly tested specifications, every shipment of material goes into "quarantine" at the Crane plants. There it stays until thoroughly tested in Crane laboratories.

This careful testing means that Crane is absolutely certain that materials are right before manufacture begins. It is only part of the elaborate system of tests and checks of tests throughout every Crane plant.

For after raw materials have been made into castings, the castings are checked and tested at every step through the various sub-assemblies, every part of a Crane product is tested, dimensions gauged and inspected. Finally, the finished valve or fitting is inspected as a whole before it leaves the plant.

There are over 33,000 gauges used in making certain that the dimensions of Crane valves and fittings are absolutely accurate. There is an army of inspectors whose only duty is to see that every Crane product is right in every part. Back of all this effort are the largest laboratories in the industry devoted to seeing that present products are properly made as well as working on new products for the future.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, PLUMBING AND HEATING MATERIAL

plied in the next few days.

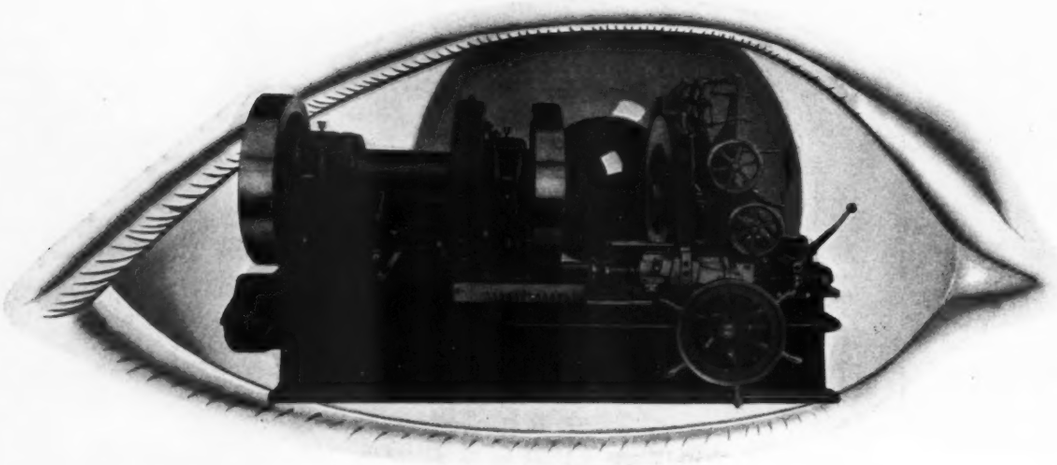
STORM SIGNALS OVER FIELDS AND LINES

CHICAGO, ILL., Sept. 24—Shortly, there will be storm signals flying from weather bureaus in oil fields, where refineries are located and where pipe lines pass. They mean trouble for oil men, for the winter always brings heavier burdens to industries where so much of the equipment is exposed.

Right now is the time to overhaul equipment and installations—find the worn and weak spots and strengthen them against the vicissitudes of winter weather.

Then CranEquip so that you have the greatest chance of keeping maintenance costs at the bottom during the stormy season. Use Crane valves, fittings and piping wherever you need replacements. You'll find most of the information you need for CranEquipping in your Crane No. 52 and other Crane catalogs. For additional information write us.

The Eyes of the Oil World should SEE



• • • the most complete display of modern
THREAD CUTTING EQUIPMENT

SEE The LANDIS Receding Chaser Machine for cutting threads more accurately and more economically on Casing, Tubing, and Drill Pipe.

SEE The LANDMACO Threading Machine,—a machine of greater accuracy and with higher production possibilities for threading bolts, rods, etc.

Both the Receding Chaser Pipe Machine and the LANDMACO Threading Machine will be in actual operation.

SEE The display of our complete line of Die Heads and Collapsible Taps for all Threading Operations.

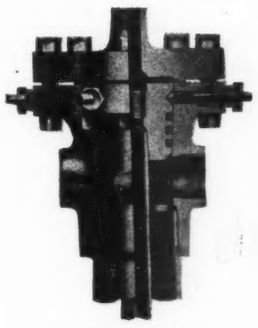
THE OIL-WORLD EXPOSITION
Booth Numbers 551-553-555

LANDIS MACHINE COMPANY, Inc., Waynesboro, Penna., U. S. A.

REPRESENTED IN THE DOMESTIC OIL FIELDS BY:
Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; D. S. Mair Machinery Corp., Houston and Dallas, Texas; Murray, Baker, Frederic, Inc., New Orleans, La.; Moore Machinery Co., Los Angeles and San Francisco, Calif.; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.

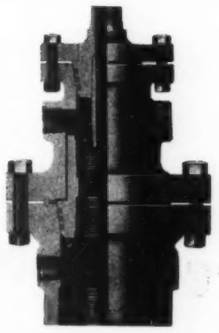
DREADNAUGHT
Pressure Type
TUBING HEADS

PREVENT KILLING THE WELL TO RUN TUBING UNDER PRESSURE



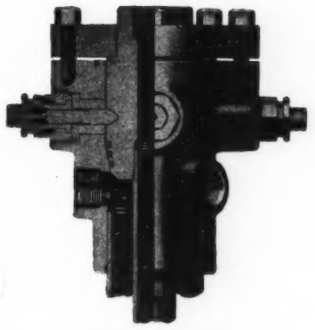
TYPE "HX-30-01"
3000-lb. TEST

Used with blowout preventer equipment, this Tubing Head permits drilling in and running tubing under pressure in perfect safety. Six nickel steel set screws, each provided with stuffing box, screw into a slot in the hanger to seal the well in after tubing is landed and permit removal of all blowout preventer equipment. Packer can be set through this head, if desired, by substituting a special packer type hanger for the regular hanger shown in the above illustration. The "HX-30-01" Tubing Head is available with flanged bottom for connecting to casing heads as shown in the "HZP" Combination at right.



TYPE "HZP" COMBINATION
6000-lb. TEST

The "HZP" Combination Casing and Tubing Head, designed for use with blowout preventer equipment, provides for complete control of the well while drilling, running and landing casing, drilling in and running tubing. Where it is desired to complete the well under pressure without killing it, the Tubing Head can be furnished with T-segment bolts as shown in the type "HX-10-70" Tubing Head at right, which hold the tubing hanger in the body of the head and while blowout preventer equipment is removed. Complete Christmas-tree assembly built to required specifications, can be furnished with the "HZP" Combination Head if desired. The "HZP" Combination Head is available with hanger to suspend either welded or threaded casing.



TYPE "HX-1070"
6000-lb. TEST

The type "HX-1070" Tubing Head is designed to permit drilling and running tubing through blowout preventer equipment against high well pressure. Tubing is suspended from a hanger which passes through the blowout preventer equipment, seats in the bowl of the body, and is locked in position by T-segment bolts which screw into a slot in the hanger. A split locking ring bolts down over a lip on top of the hanger, replacing the blowout preventer equipment. Hanger is threaded at top for Christmas-tree installation. A top bonnet connection is available if desired. This Head may be had with flanged bottom for flanging directly to casing head as shown in the "HZP" Combination at left. Hanger, designed for setting packer under pressure, available to fit this Head.

BEAUMONT IRON WORKS COMPANY

Beaumont, Houston, Dallas, Longview, Odessa, Texas—Tulsa, Oklahoma

"Selling Through Frick-Reid Stores Everywhere"

DREADNAUGHT

Fluor Air-Cooled Mufflers reduce compressor plant exhaust noises to a minimum. They're quiet! Fluor Air-Cooled Mufflers effect cooler stack, room and floor temperatures. They're cool! Expenditures for water as a cooling medium and the attendant expense of cleaning scale-caked exhaust lines are eliminated. Also, complete absence of steam vapor prevents corrosion of nearby equipment. Uniformly low back pressure permits development of maximum engine horsepower.

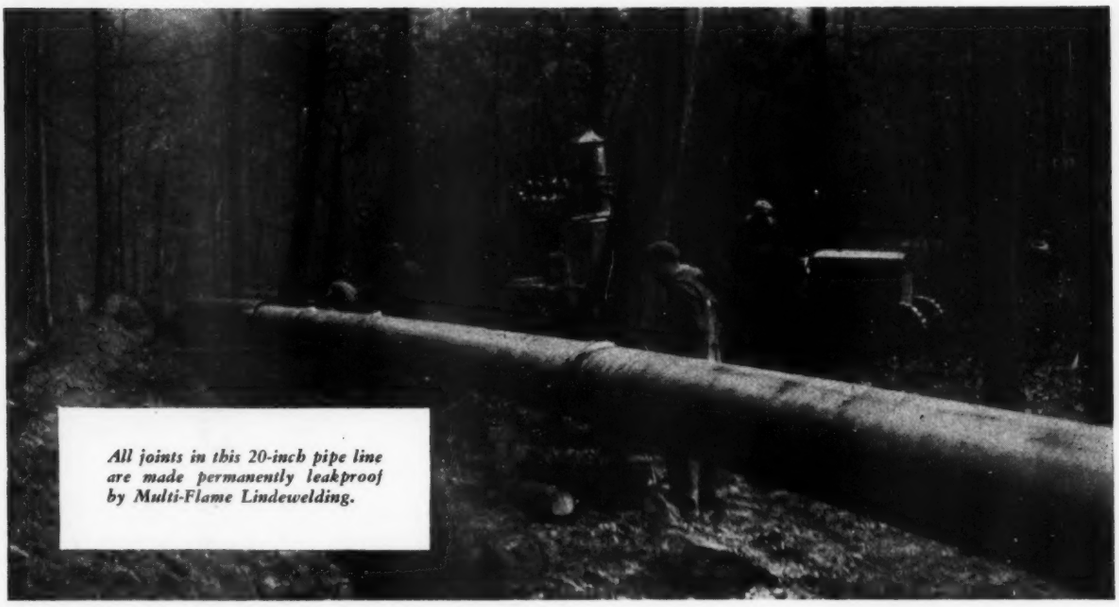
The operation of a Fluor Air-Cooled Muffler is simplicity itself. Exhaust gases are released within and below an outside stack. The explosive force of the exhaust induces a current of air through the air duct encasing the exhaust line. The current of air circulates around the exhaust pipe for its entire length. Velocities as great as 2000 cubic feet per minute insure positive engine room ventilation.

Fluor Air-Cooled Mufflers are available for all internal combustion engines for either overhead or bottom exhaust installations. Provisions are included in their design to utilize exhaust gases for heating buildings in which they are installed. Your request for Bulletin M-436, containing valuable engineering data, will receive prompt attention.

FLUOR WITH FLUOR **AIR-COOLED MUFFLERS**

THE FLUOR CORPORATION, LTD. *Main Office:* Box 128—Station K, Los Angeles, Calif. . . . 909 McCormick Building, Chicago, Illinois . . . 703 Fairfax Building, Kansas City, Missouri . . . 934 M & M Building, Houston, Texas 710 Canadian Pacific Building, New York City, N. Y. . . . 719 McBirney Building, Tulsa, Oklahoma

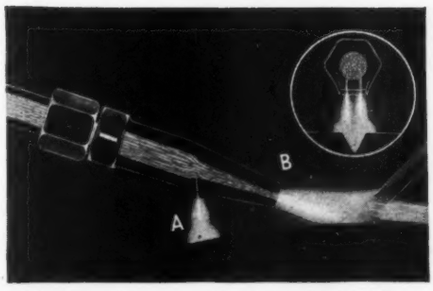
Pipe lines are dependable–
when Multi-Flame Lindewelded



All joints in this 20-inch pipe line are made permanently leakproof by Multi-Flame Lindewelding.

MULTI-Flame Lindewelding confers a new degree of dependability upon pipe-line construction. A properly made Lindeweld is consistently as strong as the pipe itself, even when the tensile strength of the pipe base material is as high as 110,000 pounds per square inch. At the same time, the weld remains tough, ductile and permanently leakproof throughout the life of the pipe.

The Linde organization can help you utilize the many benefits of Lindewelding on your future pipe-line projects. Ask your Linde representative for a copy of "Lindewelding Pipe Lines" or write the Linde office near you for full information. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.



This schematic cross section shows the Multi-Flame Lindewelding Head in action. The small flames, A, preheat the pipe while the main flame, B, melts the welding rod and postheats the weld. In the circle is a cross-sectional view through the preheating flames, A.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PRESTO-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM UCC LINDE UNION CARBIDE

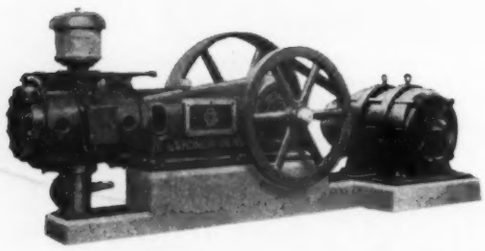
GARDNER-DENVER at the HOUSTON SHOW

with a HIGH PRESSUR BOILER FEED PUM

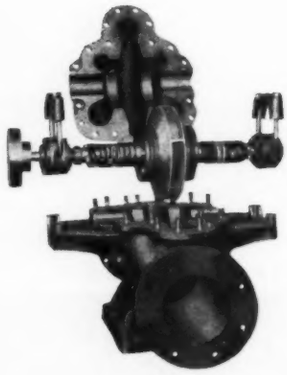
Gardner-Denver 10 x 4½ x 10 "FJ" Boiler Feed Pump

AND OTHER PACEMAKING PRODUCTS FOR THE OIL INDUSTRY . . . . . .

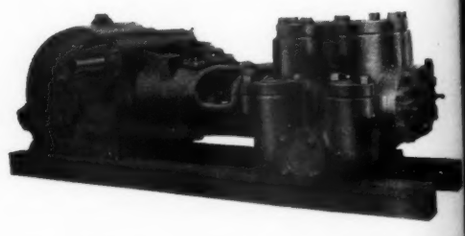
At the Houston Show, see the new Gardner-Denver 10 x 4½ x 10 "FJ" Pump for boiler feed service. It's compact and streamlined—well suited to unitization. Other features are: Valve-pot type fluid cylinders—valves in individual compartments—steam cylinders fitted with piston-type valves. Here's a pump designed for rugged oil field service.



A compressor that is setting the standard for efficiency and lower power costs under full-load service—the Gardner-Denver "RX" Horizontal Air Compressor—featuring the electro-pneumatic control that gauges air supply to meet air demand.



Tomorrow's pump—today! Gardner-Denver progressive design in Centrifugal Pump manufacture sets the standard by which other centrifugal pumps are judged.



Gardner-Denver "FXG" Duplex Power Pumps have made a name for themselves in the oil country wherever pumps operating under moderately high pressures are needed.

GARDNER-DENVER CO

QUINCY, ILLINOIS *Since 185*

DALLAS • HOUSTON • KILGORE • TULSA • LOS ANGELES

GARDNER-DENVER

DARLING

GATE VALVES

DARLING GATE VALVES DEMONSTRATE THEIR SUPERIOR PERFORMANCE AND ECONOMIES . . . .

DARLING VALVE & MFG. CO., WILLIAMSPORT, PA.

REPRESENTATIVES IN
NEW YORK, OKLAHOMA CITY, HOUSTON

MID-CONTINENT DISTRIBUTORS
INTERNATIONAL SUPPLY CO.

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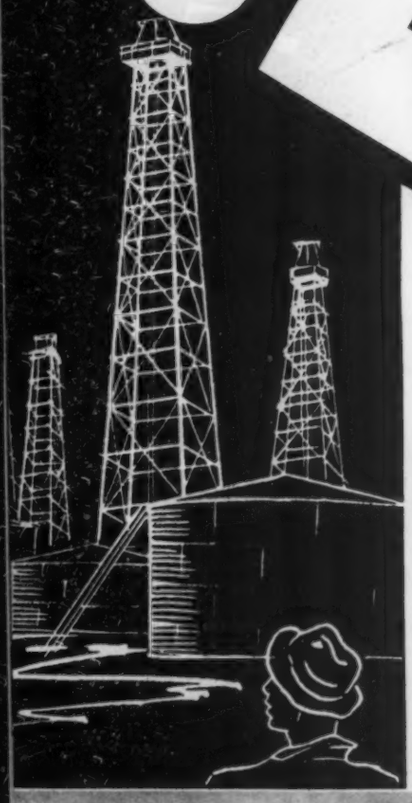
HICKEY PIPE & SUPPLY CO., 3375 EAST SLAUSON AVE., LOS ANGELES, CALIF.

P·DM

a familiar sight in every active field

OIL STORAGE TANKS



Illustrations show a typical installation of 25,000 gal. P·DM Oil Storage Tanks. These were built for the Arkansas Fuel Oil Company at Bossier City, La.

(Photos by Ledoux)

Note that we say "P·DM"! The reason steel storage tanks by Pittsburgh-Des Moines are everywhere encountered by the oil country traveler is, of course, because they're *better* tanks—better designed, better fabricated and better erected.

The experience of the shrewdest buyers of oil storage tanks is complemented by P·DM's long years of experience *in building* better tanks. That's why smart buyers and P·DM so invariably get together!

• *Write for your copy of our latest Steel Storage Tank Bulletin. For any special information you may require on any type or size of welded or riveted tanks, call upon your nearest P·DM office.*

PITTSBURGH · DES MOINES STEEL CO.

PITTSBURGH, PA. 3496 NEVILLE ISLAND — DES MOINES, IA. 997 TUTTLE ST.

NEW YORK, ROOM 980, 270 BROADWAY . . . CHICAGO, 1202 FIRST NATIONAL BANK BUILDING

DALLAS, 1201 PRAETORIAN BUILDING . . . SAN FRANCISCO, 603 RIALTO BUILDING

SINCLAIR TEN-OL

for top-notch performance and . . .

10 times more Diesel Service Hours!

Are you getting the full output that your "Caterpillar" Diesel Engine or Tractor will give?

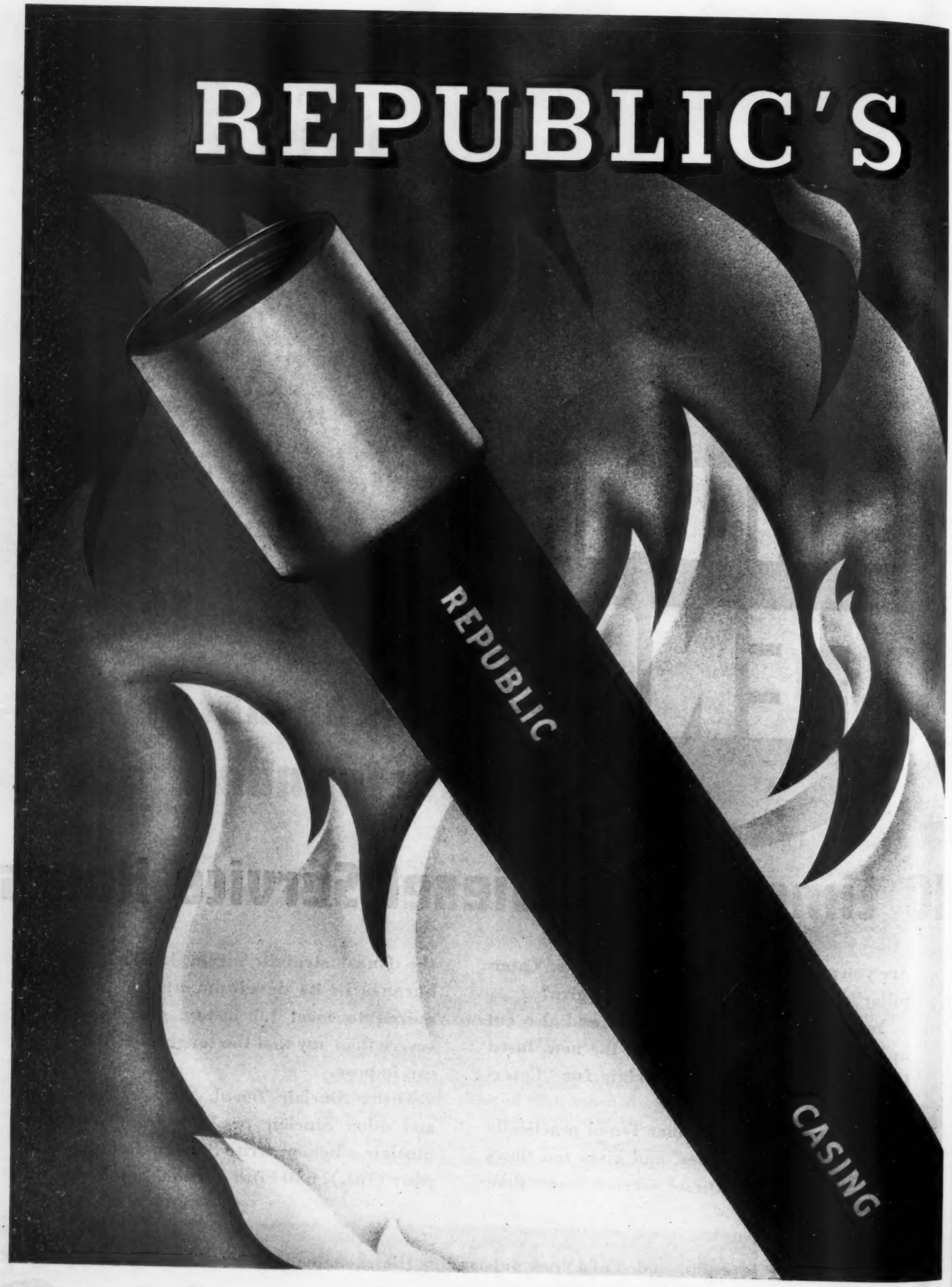
You'll get highest performance and also cut operating costs by using Ten-ol, the new, fused lubricant developed by Sinclair for "Caterpillar" Diesels.

Operators are finding that Ten-ol practically ends lubricating troubles, and gives ten times more "Caterpillar" Diesel service hours than the finest straight mineral oil. It does so because in its development Ten-ol was required to meet lubricating conditions more severe than any that the toughest actual service can impose.

Order Sinclair Ten-ol, Sinclair Diesel fuel, and other Sinclair products from your local Sinclair office, or write Sinclair Refining Company (Inc.), 630 Fifth Avenue, New York, N. Y.

Copyrighted 1937 by Sinclair Refining Company (Inc.)

Sinclair TEN-OL is recommended as a "new outstanding Diesel engine lubricant" by Caterpillar Tractor Co.


REPUBLIC'S
REPUBLIC
CASING

NEW CASING

for Deep Holes is

HEAT-TREATED

"Heat-Treatment". . . a magic word which, to users of steel, means greater strength and toughness, increased durability, longer life . . . a word responsible for the fine automobiles, airplanes, trains and machinery of today . . . a word familiar to those in the oil country who have seen heat-treated drill bits and field tools reduce drilling costs and increase drilling efficiency . . . now combines in scientific form with Republic's exclusive process of making tubular goods to produce a new alloy steel heat-treated casing with unusually high ductility and unequaled uniform high compression yield strength.

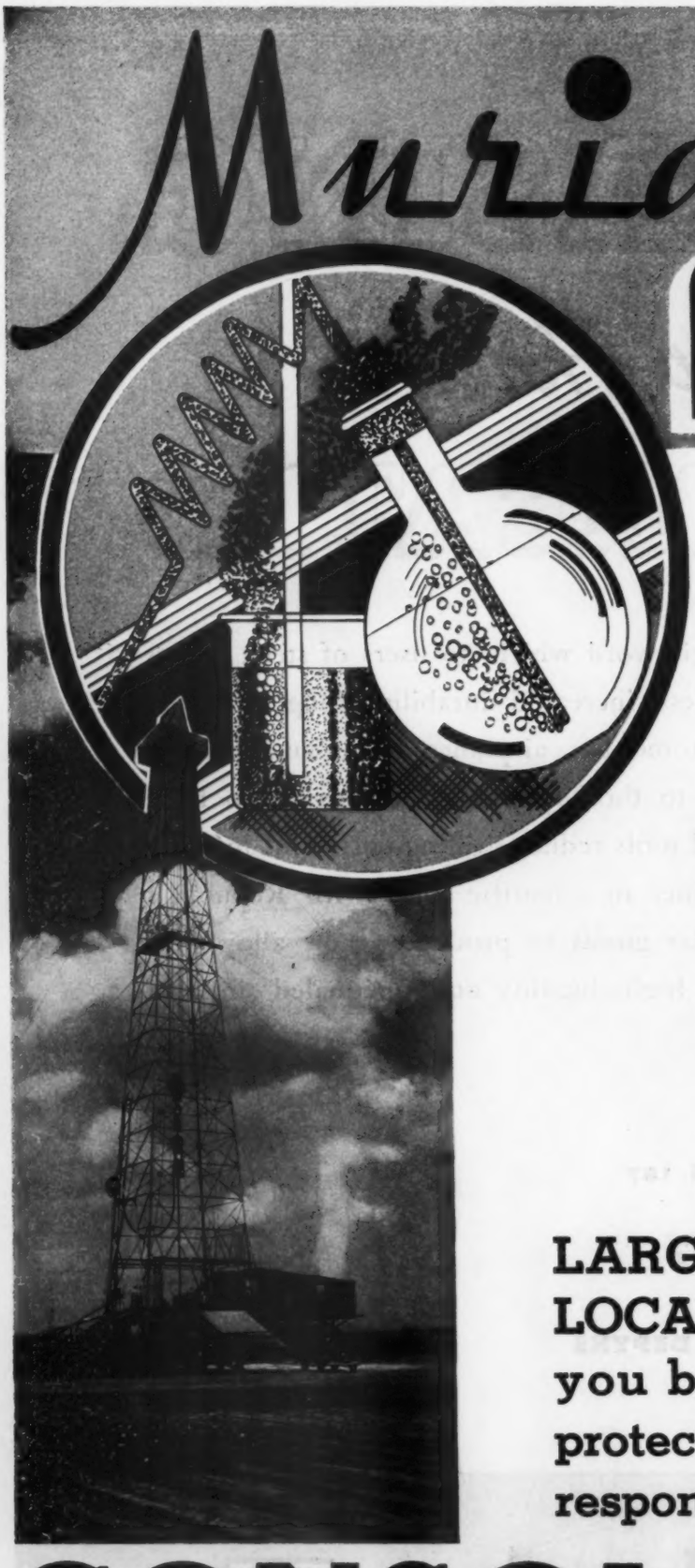
WRITE FOR NEW CATALOG 187
containing
ACTUAL COLLAPSE TESTS
and
DEEPEST SUGGESTED SETTING DEPTHS
EVER PUBLISHED

Republic Steel
Corporation

REPUBLIC
STEEL

When writing Republic Steel Corporation for further information, please address Department OG.

Muriatic ACID



RIGID MANUFACTURING CONTROL

and

CAREFUL ANALYSIS BEFORE SHIPPING

assure your getting the chemical content you specify . . . often saving you waiting or shut-down time.

LARGE, CONVENIENTLY LOCATED PLANTS...assure you better service and the protection of a large, reliable, responsible concern.

CONSOLIDATED

CHEMICAL INDUSTRIES INC.

TEXAS and LOUISIANA DIVISIONS
Formerly: Texas Chemical Company
and Louisiana Chemical Co., Inc.

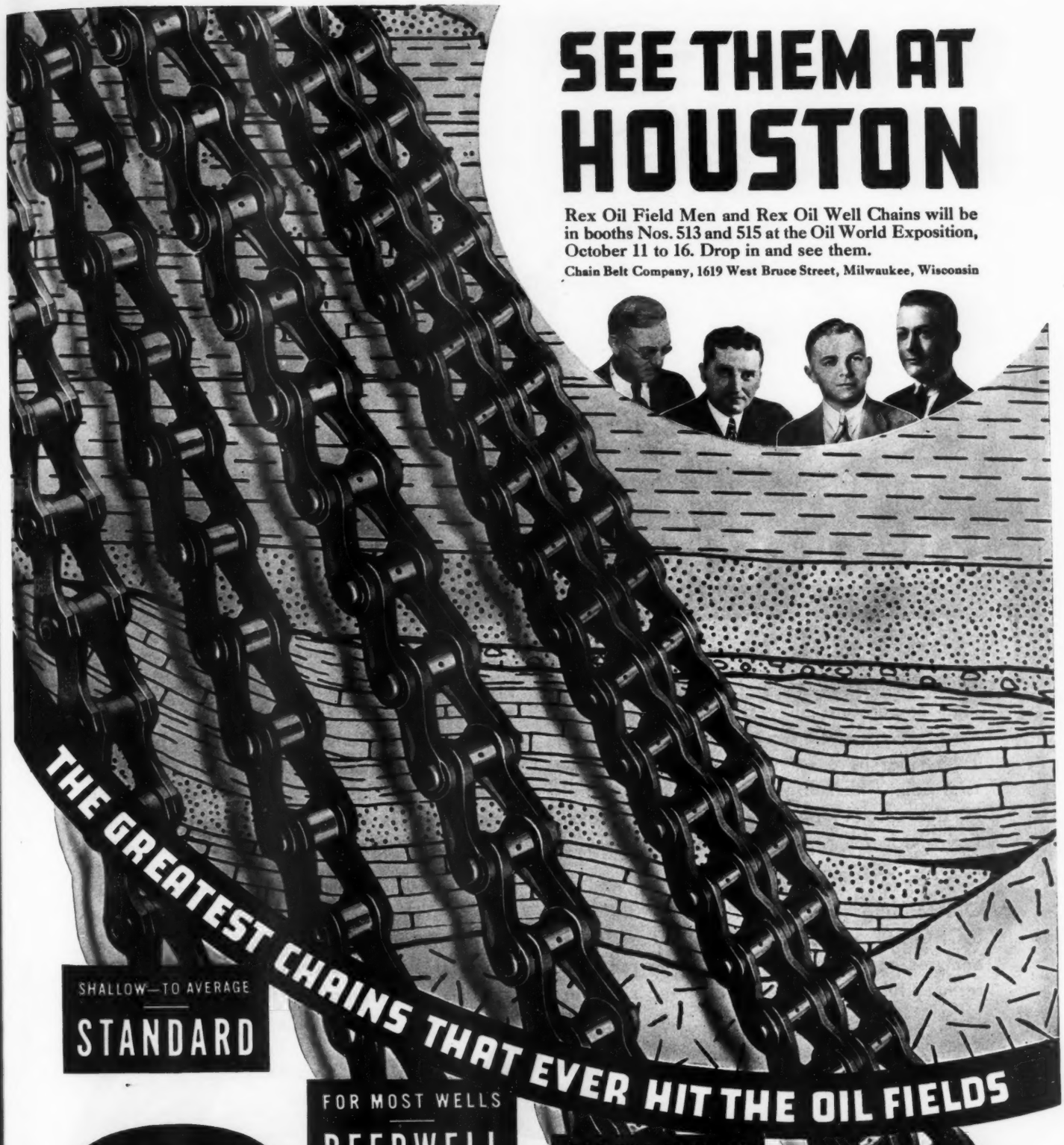
EXECUTIVE AND SALES OFFICES
Petroleum Building
HOUSTON, TEXAS

PLANTS AT HOUSTON AND FT. WORTH, TEXAS • BATON ROUGE AND BASTROP, LA.

SEE THEM AT HOUSTON

Rex Oil Field Men and Rex Oil Well Chains will be in booths Nos. 513 and 515 at the Oil World Exposition, October 11 to 16. Drop in and see them.

Chain Belt Company, 1619 West Bruce Street, Milwaukee, Wisconsin



THE GREATEST CHAINS THAT EVER HIT THE OIL FIELDS

SHALLOW—TO AVERAGE
STANDARD

FOR MOST WELLS
DEEPWELL

FOR THE DEEPEST
CHAMPION

DEEPEST AND FASTEST
UNIVERSAL

REX CHABELCO

SOLD FROM STOCK BY

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PIONEERS

OF LONGER LIFE AND . . .

LOWER COST IN REFINERY TUBES

Persistent pioneering in the development of high-temperature alloy steels has resulted in the production of a range of TIMKEN Refinery Tubes that have extended tube life average to a point which, together with a corresponding decrease in tube replacements and involuntary shutdowns, represents a substantial saving in tube costs.

Outstanding in the TIMKEN line are DM, SICROMO and SILMO Tubes. These three analyses cover practically the entire range of refinery tube requirements for creep strength, pressure, high temperature yield stress value, oxidation and corrosion resistance. In the development of these tubes it has been our aim to attain qualities comparable with those of expensive high chromium alloys at a cost which permits their freer use—particularly where carbon tubes are inadequate for the job.

No matter what your operating conditions may be in cracking stills, heat exchangers, condensers or other refinery equipment it will pay you to try TIMKEN Tubes—made where quality is controlled from raw material to finished product.

GOOD WILL BASED ON GOOD STEEL

TIMKEN STEEL AND TUBE DIVISION

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

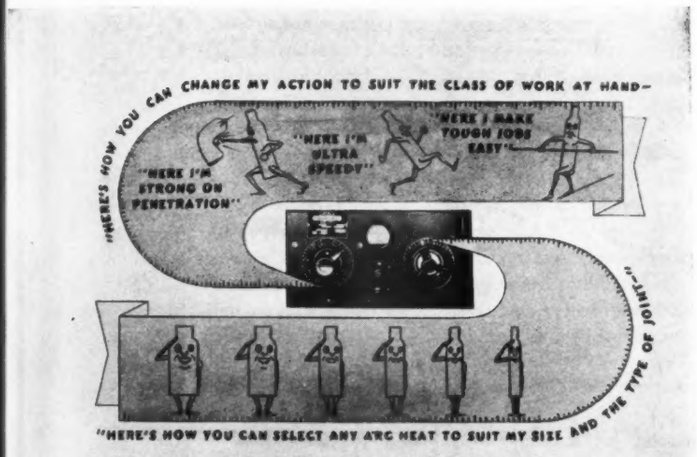
Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; Timken Rock Bits; and Timken Fuel Injection Equipment.

TIMKEN

SEAMLESS STEEL TUBES

"I helped H. C. Price Co., and Shell Oil Co. set a record in the construction of this 10-in. line. 304 miles in 70 days and not a single joint leaked when tested."

"WHEN YOU BUY A WELDER GET AN 'SAE.' IT CAN BE TUNED TO THE JOB FOR 15% FASTER WELDING


"HERE'S HOW YOU CAN CHANGE MY ACTION TO SUIT THE CLASS OF WORK AT HAND—
"HERE I'M STRONG ON PENETRATION"
"HERE I'M ULTRA SPEEDY"
"HERE I MAKE TOUGH JOBS EASY"
"JOINT—"
"HERE'S HOW YOU CAN SELECT ANY ARC HEAT TO SUIT MY SIZE AND THE TYPE OF JOI

"A welder without a Job Selector is like a hotel-room radio that's tuned in to one station permanently. If it's fixed for symphony results you get symphony results regardless of whether you want prize fight results, swing music results, news results or comedy results. You get what somebody else gives you and there's no way out of it.

"But the man who welds with the *'Shield-Arc* SAE' *gets what he wants.* With its Dual Continuous Control, he can tune in any *type* of welding heat to suit his style for various jobs. By a twist of the wrist, he merely sets the Job Selector . . . just as simple as tuning in a radio.

"As a result, he gets denser, cleaner welds 15% to 20% faster. Ask for proof.

"Yours for giving welding operators the TYPE and SIZE of arc they want,

"FLEETWELD ROD"
—Spokesman for all progress-minded welding electrodes and emissary of

THE LINCOLN ELECTRIC COMPANY
Largest Manufacturers of Arc Welding Equipment in the World

THE LINCOLN ELECTRIC CO., Dept. N-431, Cleveland, Ohio

My welding application is_____
How can the "SAE" do it faster?

☐ Send a free copy of Bulletin 412 giving details about the new *"Shield-Arc* SAE" welder. ☐ Send a free copy of Bulletin 418 on Pipe Line Construction.

Name_____ Position_____
Company_____
Address_____
City_____ State_____

LINCOLN "SHIELD-ARC SAE"

THE WELDER WITH DUAL *CONTINUOUS* CONTROL

Typical Pumping Installation

In South and Southwest Texas

it's particularly convenient to use

Purchased ELECTRIC Power

Besides, you get

- LOWER INSTALLATION COSTS
- MORE ECONOMICAL OPERATION
- GREATER DEPENDABILITY
- GREATER SALVAGE VALUE OF EQUIPMENT

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Central Power and Light Company
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Note: In addition to major lines shown, the Company has hundreds of miles of lower-voltage tributary lines connecting with major transmission lines.
MEXICO
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MEXICO

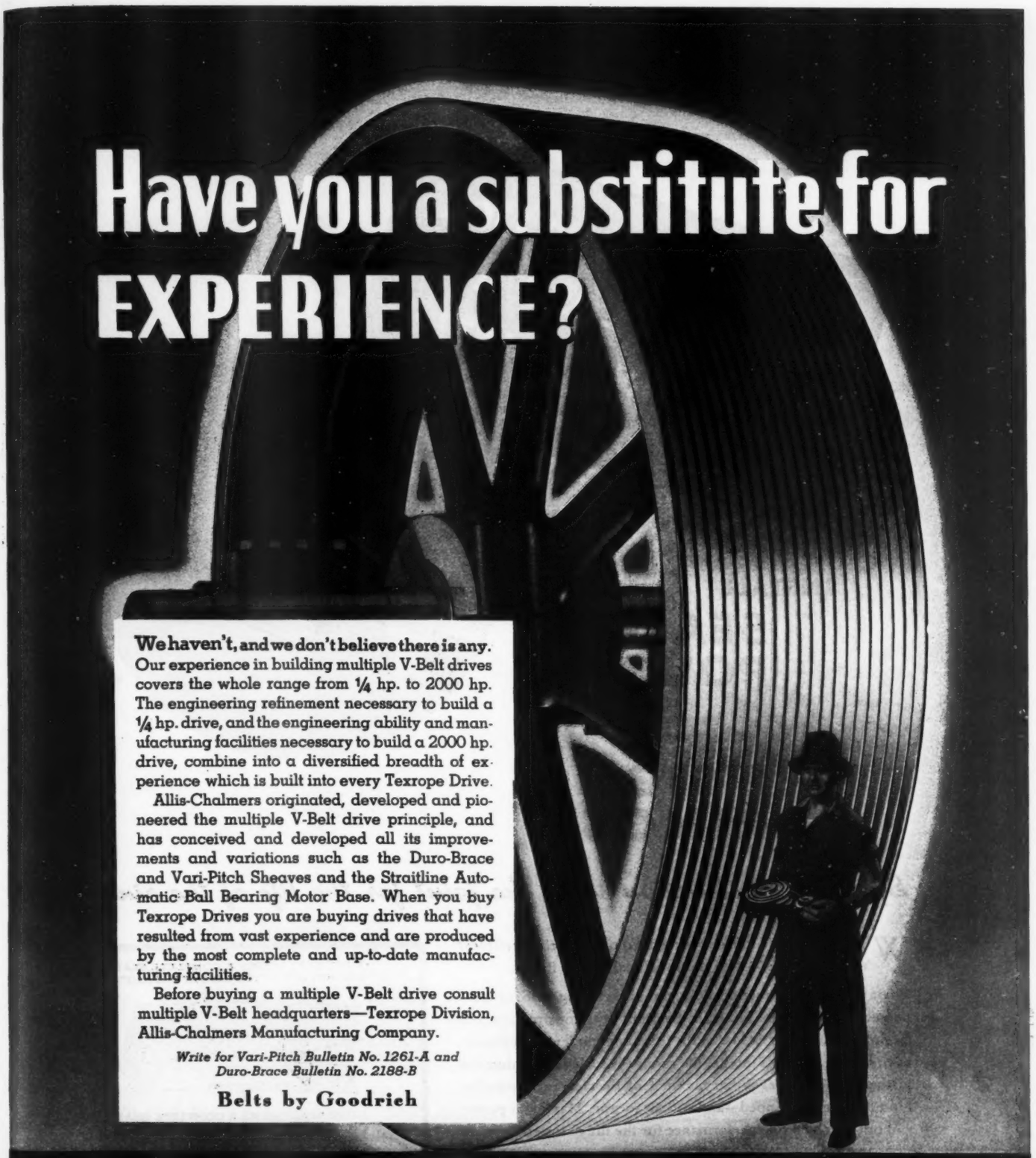
For further information on installation or operating costs in your particular location, write, without obligation, to our Commercial Department at Corpus Christi, Texas.

★ *Central Power and Light Company*

General Offices: Corpus Christi

MEMBER PETROLEUM ELECTRIC POWER CLUB

Have you a substitute for EXPERIENCE?



We haven't, and we don't believe there is any. Our experience in building multiple V-Belt drives covers the whole range from 1/4 hp. to 2000 hp. The engineering refinement necessary to build a 1/4 hp. drive, and the engineering ability and manufacturing facilities necessary to build a 2000 hp. drive, combine into a diversified breadth of experience which is built into every Texrope Drive.

Allis-Chalmers originated, developed and pioneered the multiple V-Belt drive principle, and has conceived and developed all its improvements and variations such as the Duro-Brace and Vari-Pitch Sheaves and the Straitline Automatic Ball Bearing Motor Base. When you buy Texrope Drives you are buying drives that have resulted from vast experience and are produced by the most complete and up-to-date manufacturing facilities.

Before buying a multiple V-Belt drive consult multiple V-Belt headquarters—Texrope Division, Allis-Chalmers Manufacturing Company.

Write for Vari-Pitch Bulletin No. 1261-A and Duro-Brace Bulletin No. 2188-B

Belts by Goodrich

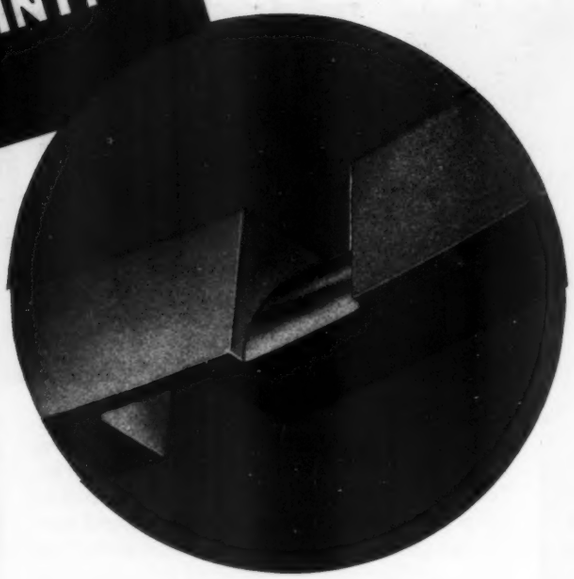
TEXROPE DIVISION

ALLIS·CHALMERS

761

MILWAUKEE WISCONSIN

HERE'S HOW TO LICK POWER LOSS AT THE RING JOINT!



INSTALL SEALED POWER *Joint Seal* PISTON RINGS

Special Construction seals the joint for the life of the ring

WOULD you like to free yourself from piston ring troubles? You can—*easily*—with the Joint Seal Piston Rings.

Their special construction licks the biggest bugaboo of all—power leakage at the joint. In the Joint Seal construction, the face of the ring is sealed off at the joint to complete the cylinder bore sealing. And the joint at the groove is sealed off against the piston land. This means that gas entering the clearance space behind the ring is trapped—and cannot escape. Maximum power and top-notch engine performance for the life of the ring result.

Sealed Power Joint Seal Rings cost but a few cents more than plain rings. To borrow a phrase from a noted advertiser . . . "What a difference a few cents make!"

JOINT SEAL FORMS A COMPLETE SEAL ON THE FACE OF THE RING AT THE JOINT
Strength of Joint is Maintained
JOINT SEAL FORMS A COMPLETE SEAL ON THE SIDE OF THE RING AT THE JOINT

LOCK JOINT CONSTRUCTION

The above diagram shows how Sealed Power Joint Seal Rings end power loss at the joint. Throughout the life of the ring, the strength is maintained. The sealing area is also maintained as the ring wears.

SEALED POWER CORPORATION

Dept. 3310, Muskegon, Mich. • Dallas Warehouse—2717 Main St.
Canadian Factory at Walkerville, Ont.

A SWELL TRAVELING COMPANION

HUMBLE
THREDKOTE
(Reg. U. S. Pat. Off.)

Tool joints that start their journey from plant to field with their threads well coated with Humble Thredkote reach their destination with threads as shiny as they were the moment they left the lathe. Humble Thredkote repels corrosion; it prevents rust formation; it is the best traveling companion a tool joint can have.

Humble Thredkote is manufactured and distributed by

HUMBLE

Picture shows Humble Thredkote being applied to the threads of tool joints before shipment. All pin and box threads are thoroughly coated.

HUMBLE OIL & REFINING COMPANY
HOUSTON, TEXAS

BUY ACCO QUALITY

after extensive experience this Gas Plant chose R·P&C Lubrotite Gate Valves

Foreign materials invariably complicate efficient shut-offs in the piping of gas . . . A large fuel gas company, after extensive experience with Reading-Pratt & Cady Lubrotite Valves, chose them for the installation pictured.

Reading-Pratt & Cady Lubrotite Valves remain tight regardless of service conditions. The unique method of applying a lubricant seal through a duct system, seals the closure and prevents wear by coating the seat surfaces with a corrosion resistant film. R-P & C Lubrotite Gate Valves are highly recommended where leak-proof service is essential.

READING-PRATT & CADY DIVISION
AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT, CONNECTICUT
In Business for Your Safety

A FEW OF THE 137 AMERICAN CHAIN & CABLE INDUSTRIAL PRODUCTS

AMERICAN CHAIN DIVISION
(DOMINION CHAIN COMPANY, Ltd., in Canada)
Weed Tire Chains • Welded and Weldless Chain • Malleable Castings • Railroad Specialties

AMERICAN CABLE DIVISION
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ANDREW C. CAMPBELL DIVISION
Abrasive Cutting Machines • Floformers Special Machinery • Nibbling Machines

FORD CHAIN BLOCK DIVISION
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HIGHLAND IRON & STEEL DIVISION
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MANLEY MANUFACTURING DIVISION
Automotive Service Station Equipment

OWEN SILENT SPRING COMPANY, Inc.
Owen Cushion and Mattress Spring Centers

PAGE STEEL AND WIRE DIVISION
Page Fence • Wire and Rod Products Traffic Tape • Welding Wire

READING-PRATT & CADY DIVISION
Valves • Electric Steel Fittings

READING STEEL CASTING DIVISION
Electric Steel Castings, Rough or Machined

WRIGHT MANUFACTURING DIVISION
Chain Hoists • Electric Hoists and Cranes

READING·PRATT & CADY VALVES

» **See Valves in Booths Nos. 729 and 731 at the Oil-World Exposition, Inc., Houston, Texas—Oct. 11-16, 1937** «

PAPER HORSEPOWER
SITS DOWN ON
THE JOB . . .

It takes
REAL HORSEPOWER
TO DRIVE A ROTARY DRILLING RIG

WAUKESHA
ENGINES

Paper horsepower is over-rating. You can see it on the performance curve all right, but you can't get it out of the engine itself.

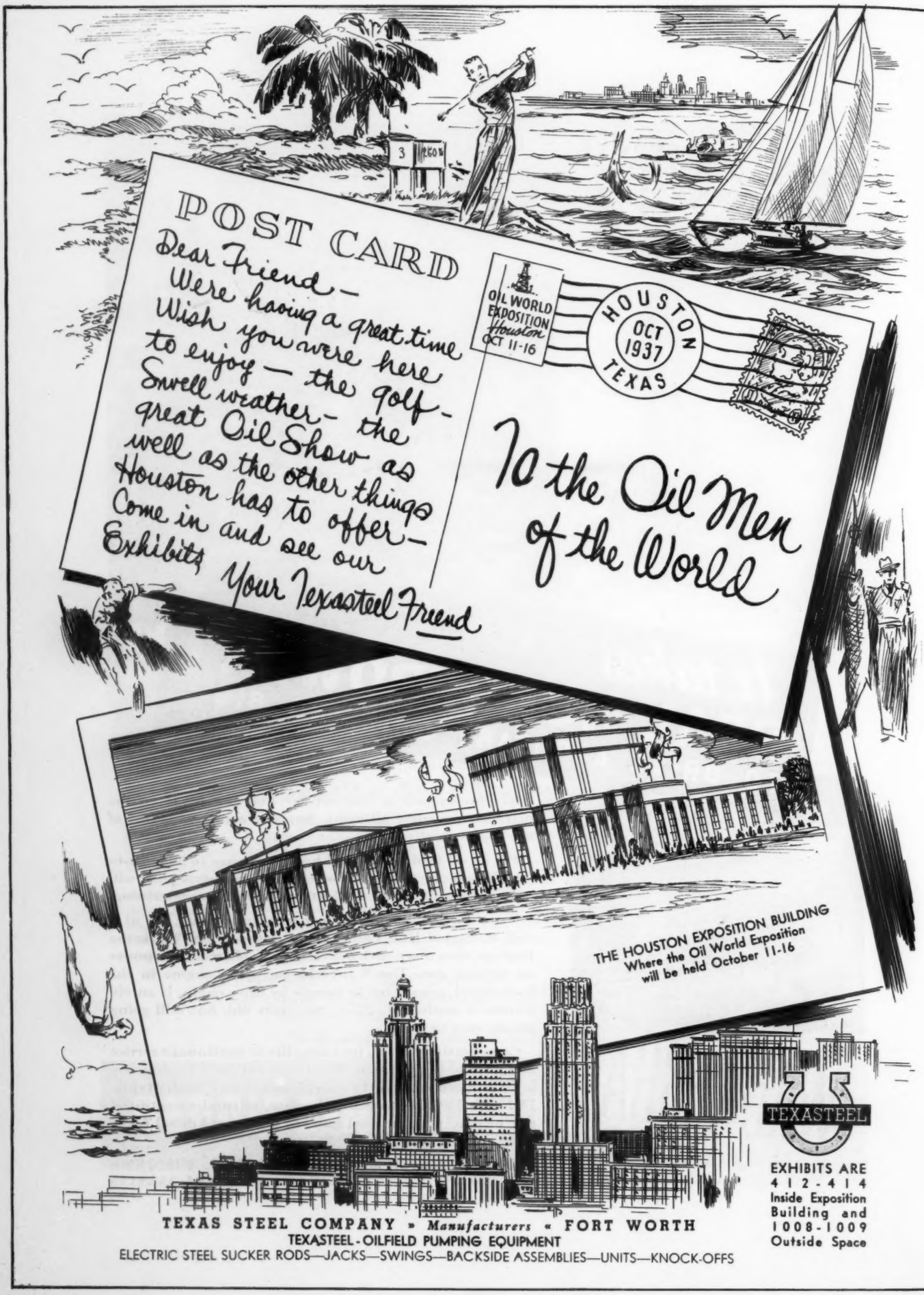
For an oil field engine *real horsepower* has to be *built-in*—as Waukesha builds it in—with rugged parts that will perform eagerly without effort and without overstraining.

Working in tandem, driving a rotary drilling rig at a well on Signal Hill, California, the two WOK Waukesha Engines shown are each delivering 136-162 real horsepower on natural gas. The Waukesha pumping engine in the foreground, connected to pumps by drive chain, is an old timer—a model WL-23-S, ten years old, but still going strong on a new rig.

Conservatively rated, for a long life of continuous service and profitable operation, Waukesha Oil Field Engines are built in more than thirty sizes, four and six cylinder types, 10 hp to 300 hp—to burn gasoline, natural or artificial gas, butane, propane, and modern high speed diesel fuels.

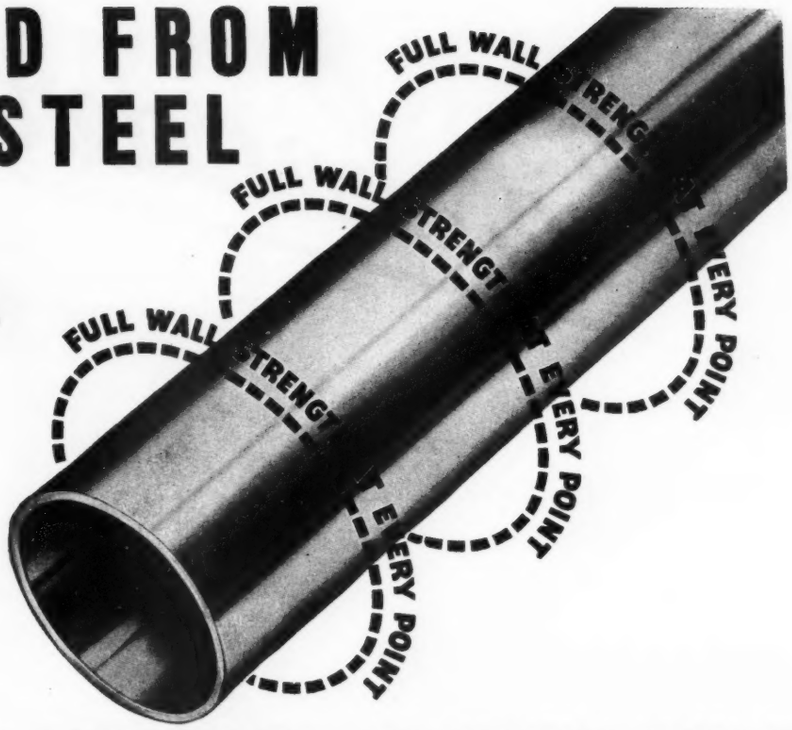
Write for Bulletin 1019.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES


POST CARD
Dear Friend—
Were having a great time
Wish you were here
to enjoy — the golf —
Swell weather — the
great Oil Show as
well as the other things
Houston has to offer —
Come in and see our
Exhibits Your Texasteel Friend
OIL WORLD EXPOSITION Houston OCT 11-16
HOUSTON OCT 1937 TEXAS
To the Oil Men of the World
THE HOUSTON EXPOSITION BUILDING
Where the Oil World Exposition
will be held October 11-16
TEXASTEEL
EXHIBITS ARE
412-414
Inside Exposition
Building and
1008-1009
Outside Space
TEXAS STEEL COMPANY » Manufacturers « FORT WORTH
TEXASTEEL - OILFIELD PUMPING EQUIPMENT
ELECTRIC STEEL SUCKER RODS—JACKS—SWINGS—BACKSIDE ASSEMBLIES—UNITS—KNOCK-OFFS

PIERCED FROM SOLID STEEL

Means



FULL WALL STRENGTH AT EVERY POINT

ONLY first-quality killed open hearth and electric furnace steels can survive the Globe piercing operation—a positive guarantee of the soundness of the steels used in producing Globe Seamless Tubes. This also assures uniform rolling-in qualities.

Since each tube is pierced from a solid billet of steel, full wall strength is provided at every point with no seams or welds that might prove a starting place for costly failure. A Globe Tube is a solid piece of steel, structurally uniform and sound from end to end and with complete homogeneity of wall structure.

Destructive corrosion finds it hard to get a foothold in the smooth, solid unbroken surface of Globe Tubes.

For greater safety, value and savings specify Globe "Seamless for Safety" tubes.

GLOBE Seamless TUBES

GLOBE STEEL TUBES CO.
4008 W. BURNHAM ST. MILWAUKEE, WIS.

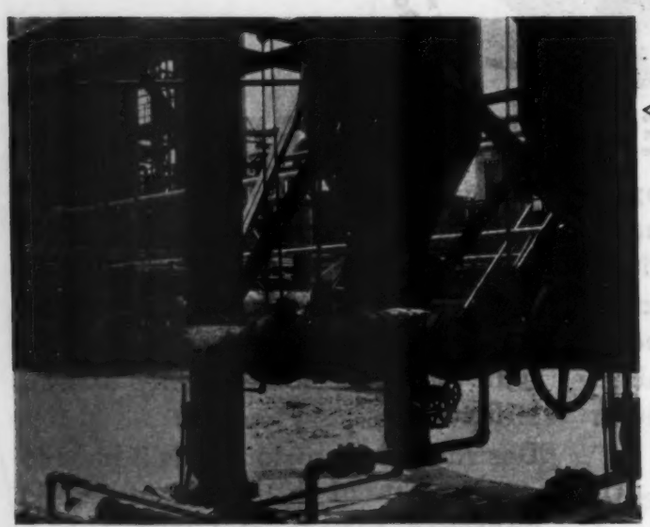
GLOBE STEEL TUBES
Seamless for Safety

The Leader!

ON PARADE

Exhibit of Vogt Drop Forged Steel Valves at the International Petroleum Exposition in Tulsa.

ON STREAM



Vogt High Pressure, High Temperature Forged Steel Valves at the Spartan Refining Company, Shreveport, La.

Write for Catalog F-7

Manufacturers of: Drop Forged Steel Valves and Fittings, Water Tube Boilers, Oil Refinery Equipment, Ice Making and Refrigerating Machinery, Heat Exchangers

Vogt DROP FORGED *Steel* VALVES

HENRY VOGT MACHINE COMPANY, *Incorporated*, LOUISVILLE, KY.

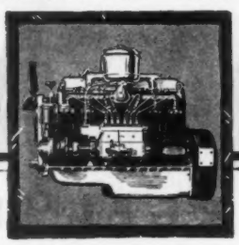
NEW YORK CHICAGO PHILADELPHIA CLEVELAND CINCINNATI KANSAS CITY DALLAS

PROVED BY YEARS OF SERVICE IN THE OIL FIELDS OF THE WORLD

Hercules Engines have long held the respect of operators in oil fields all over the world. Oil men know that in continuous, 24-hour service—handling maximum loads with necessary efficiency and economy — Hercules power is always dependable. For rotary drilling, spudding, well servicing, pumping—and other heavy-duty uses—Hercules powered equipment has for years stood the severest tests the oil fields can offer. Hercules Engines and power units—both gasoline and Diesel—are distinguished for advanced engineering, simplicity of design and sturdy construction.

HERCULES MOTORS CORPORATION, CANTON, OHIO

America's Foremost Engine Manufacturer • Power Plants from 4 to 200 H. P.

HERCULES  ENGINES

IN THE SHORT PERIOD OF *Six* MONTHS

8 New Lummus Plants...

HAVE BEEN COMPLETED...TESTED... PUT INTO OPERATION

Eight new Lummus plants . . . cracking units . . . topping plants . . . lube oil refineries . . . solvent refining . . . solvent dewaxing plants . . . have been completed . . . tested . . . accepted by the purchasers and put into operation within the past six months.

Located in Italy, Germany, New Jersey, Pennsylvania, Texas, and Ohio, these evidence the wide scope of Lummus construction.

It is interesting to note that every one of these eight plants is operating successfully, meeting or exceeding guarantees. These eight plants were designed with an accurate analysis and intimate knowledge of the problems of the various oil companies. They are all profit-making plants, producing high yields of marketable products.

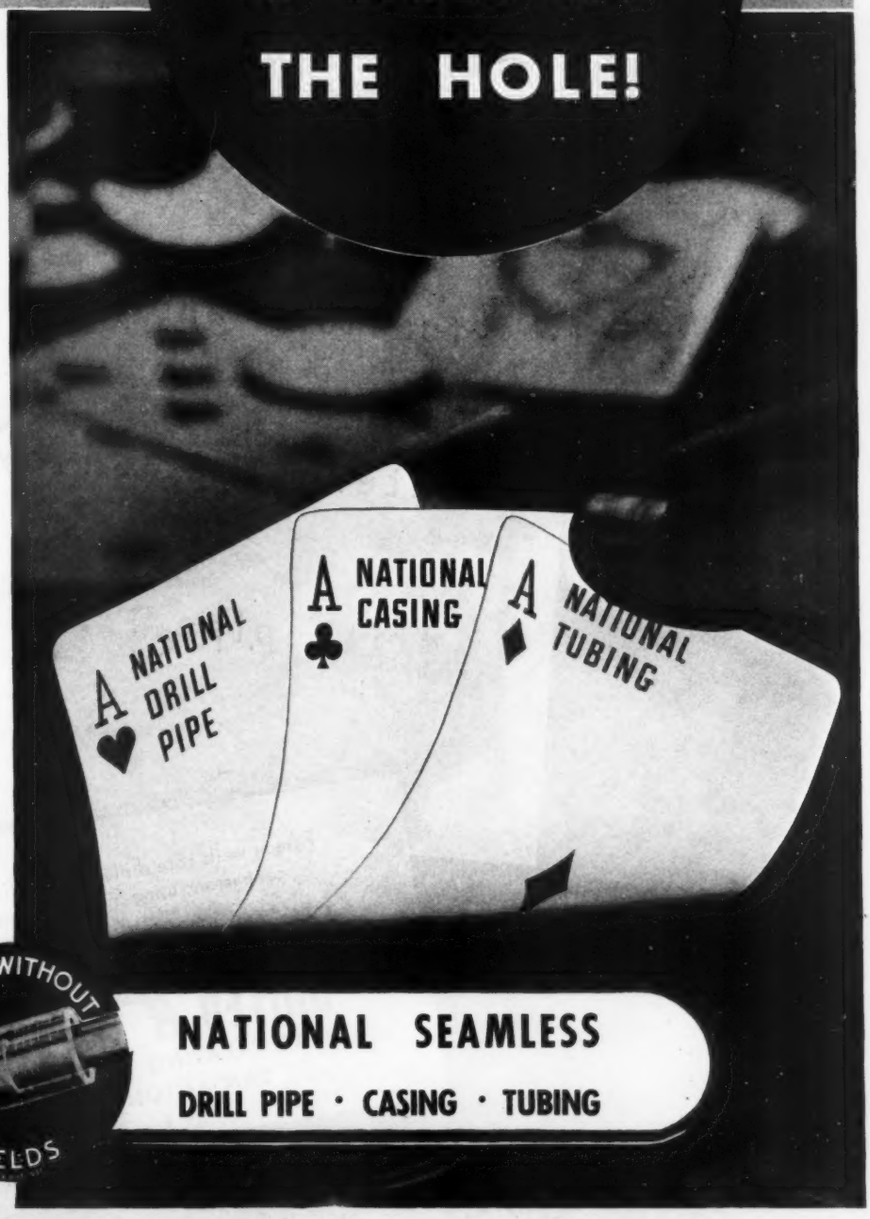
Lummus engineers will be glad to study your problems and to submit suggestions for new construction or the modernization of existing facilities.

THE LUMMUS COMPANY, 420 LEXINGTON AVENUE, NEW YORK, N. Y. • BUSH HOUSE, ALDWYCH, LONDON, W. C. 2

LUMMUS

PETROLEUM REFINING PLANTS

PLAY SAFE . . . WITH THESE 3 ACES IN THE HOLE!



YOU have swelled the "pot" with time and expense before you are actually ready to drill and set casing in your well. Here's where you will be "sitting pretty" if you have three aces in the hole. NATIONAL Seamless Drill Pipe, Casing, and Tubing are ready to meet the most difficult situations whenever the "call" comes for a show down.

When you're in the game, play safe with these three aces:—

1. National Seamless Drill Pipe. Its remarkable strength, unusual toughness, exceptional ductility, and superior threads have proved beyond question that it will stand up when the going is tough.

2. National Seamless Casing. It has uniform wall-strength because it is pierced from solid steel — it has no welds. "NATIONAL" A. P. I., D. B. X. and D.B. 8 joints are accurately made, so they stab easily and screw together smoothly.

3. National Seamless Tubing. Stays tight after many pulling jobs. With upset ends, it gives long service in heavy pumping wells.

For profitable drilling, casing, and tubing of wells, play safe with these 3 Aces in the Hole — NATIONAL Seamless . . . America's Preferred Drill Pipe, Casing, and Tubing.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

S A T I S F A C T I O N

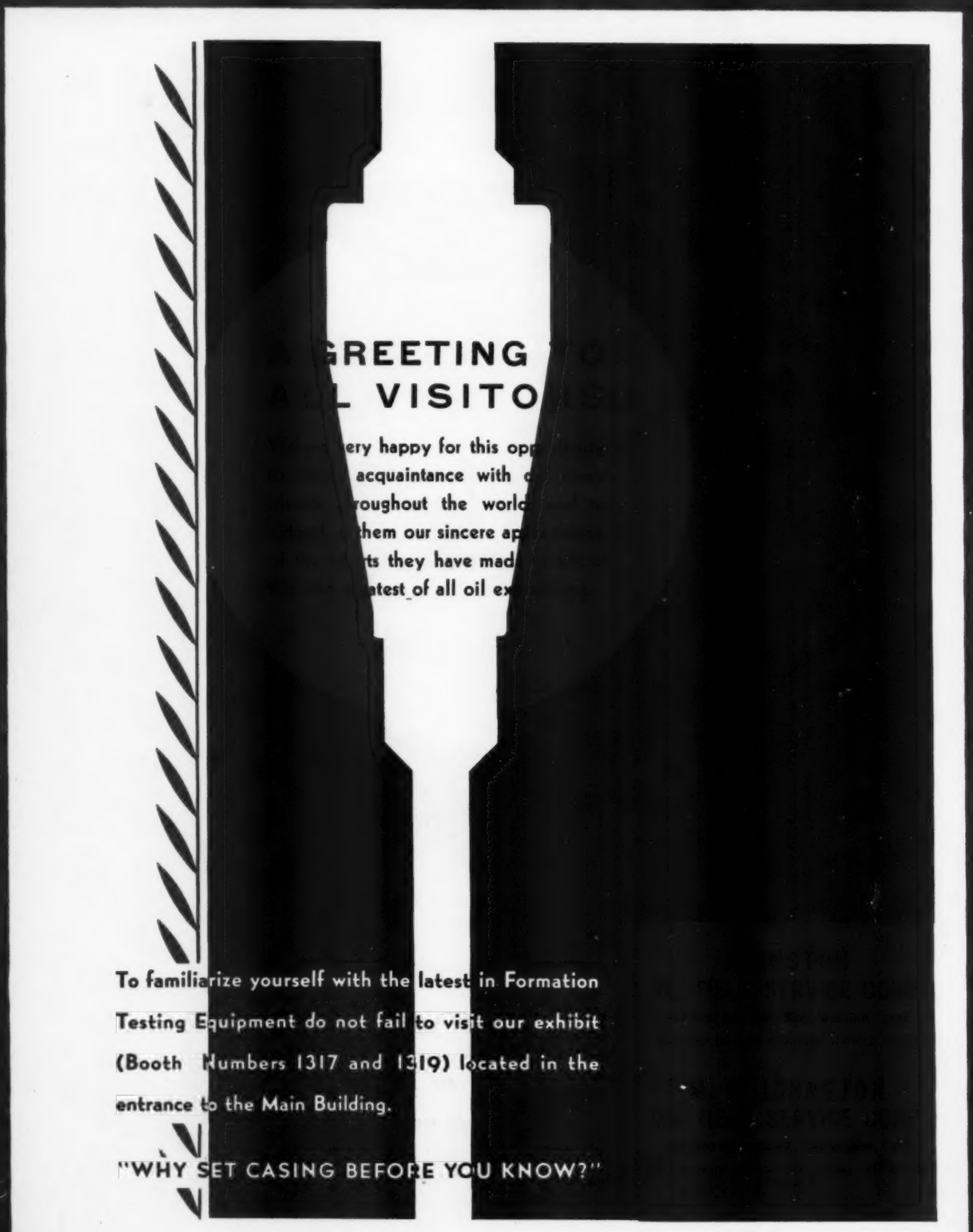
"Send two core barrels same as before for four and one half internal flush Hydril drill pipe....."

Fifteen wells core drilled by this firm of drilling contractors, using Signaling Core Barrels.

UNITED STATES
HEAT TREATING COMPANY, INC.
SAN ANTONIO, TEXAS

PENNINGTON'S SIGNALING CORE BARREL

"Sorry, girls, but I'm going over to Booths 708-712 at the Oil-World Exposition and see those swell EDWARD VALVES"


GREETING
L VISITO
ery happy for this opp
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To familiarize yourself with the latest in Formation Testing Equipment do not fail to visit our exhibit (Booth Numbers 1317 and 1319) located in the entrance to the Main Building.
"WHY SET CASING BEFORE YOU KNOW?"

INTRODUCING!
2 New LOW-PRICE FLUPACO PUMPS
FOR SMALL PRODUCTION WELLS
HOUSTON OIL SHOW
BOOTH 254
FLUID PACKED PUMP CO.
ON DISPLAY IN BOOTH 254
FLUID PACKED PUMPS
Positive Pull Type
Removable (key) Type
Rigid Type
THE NEW "MARGINAL" FLUID PACKED PUMP
FLUPACO GROOVE SEAL PUMPS:
The "Producer"
The "Volume Producer"
THE NEW "PETROL A" GROOVE SEAL PUMP
"MARGINAL" Fluid Packed Pump
Especially designed to cut pumping costs in marginal wells where severe sand conditions are stealing your profit. In every respect a FLUID PACKED PUMP, the "Marginal" has the world-famous fluid-packed principle that insures long service life and few repairs. Workmanship and materials are the same as in the standard-length Fluid Packed Pumps — but the price is low. The "Marginal" is of the Positive-Pull type — the whole pumping assembly being run in and pulled out on the rods — thus eliminating tubing jobs. See the "Marginal" at the show — ask for illustrated literature and prices.
"PETROL A" Groove Seal Pump
Here is a new, low-price Flupaco Groove Seal pump for wells of comparatively small volume and shallow depth. Expert workmanship and specially selected and heat treated materials enable us to make the "Petrol A" a precision-fitted pump that will give long, efficient service with a minimum of repair expense and downtime. Examine the Flupaco "Petrol A" at the oil show. Compare its quality and workmanship. Ask for illustrated literature and prices.

FLUID PACKED PUMP COMPANY

BOX 64 • LOS NIETOS, CALIFORNIA • U.S.A.

Mid-Continent and Texas Distribution — FLUID PACKED PUMP CO. — MID-CONTINENT
25 E. 29th ST., OKLAHOMA CITY, OKLAHOMA • *Gulf Coast Headquarters:* 409 Velasco St., Houston, Texas

WE TESTED THIS 450 TIMES

To prove its Quality

JUST as each part of a well built machine* must be tested individually before it is accepted, so each individual wire in American Tiger Brand Wire Lines is tested at least 3 times, in addition to test for size, before it can pass to the stranding machines.

Your work puts wire lines to the severest tests. They must string or reeve easily and quickly . . . spool well . . . avoid whipping at high speeds . . . take the terrific jerks of starting and stopping.

And it is these qualities in American Tiger Brand Wire Lines which have given them their dominant position in the field — qualities which have been built into them by engineers whose wealth of experience is backed by over 100 years of wire making.

American Tiger Brand Wire Lines are available in either Standard (non-preformed) or Excellay (preformed) constructions.

***USS American Tiger Brand Wire Lines are machines, more depended on than many. They fit the definition "Any combination of mechanism for utilizing or applying power."**

ELECTRICAL WIRES AND CABLES

We manufacture a complete line of Electrical Cables for the Oil Fields, some of which are —

Amerclad All-Rubber Cords and Cables—Including Oil Proof and Oil Resisting Types · Rubber Covered Wire · Reliance URC Weatherproof Wire · Motor Leads · Switchboard Wires · Geophone · Seismograph and Electrical Prospecting Cables.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY
Russ Building, San Francisco

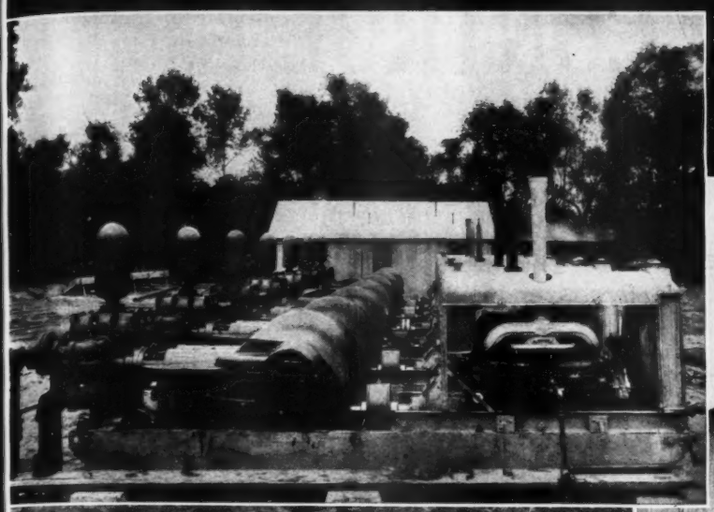
United States Steel Products Company, New York, *Export Distributors*

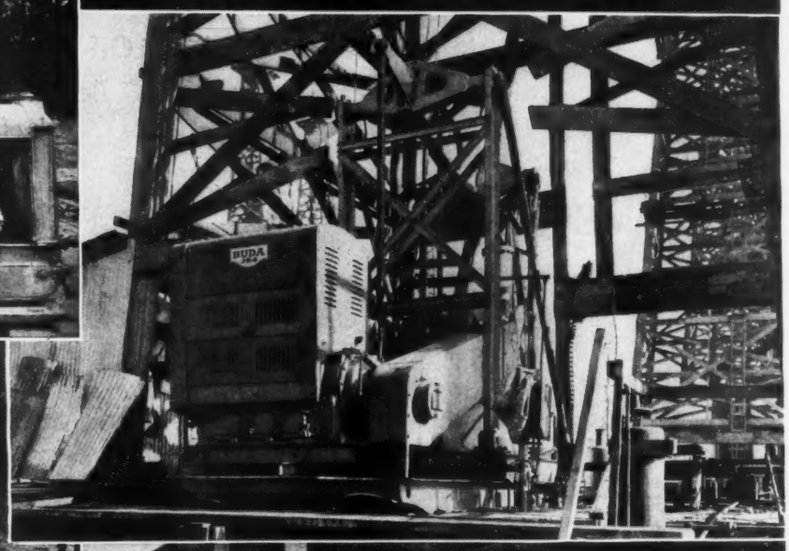
UNITED STATES STEEL

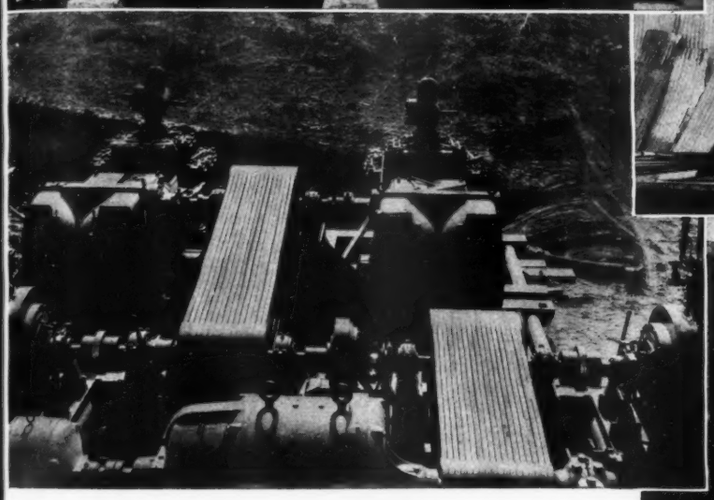
PUTTING POWER TO WORK

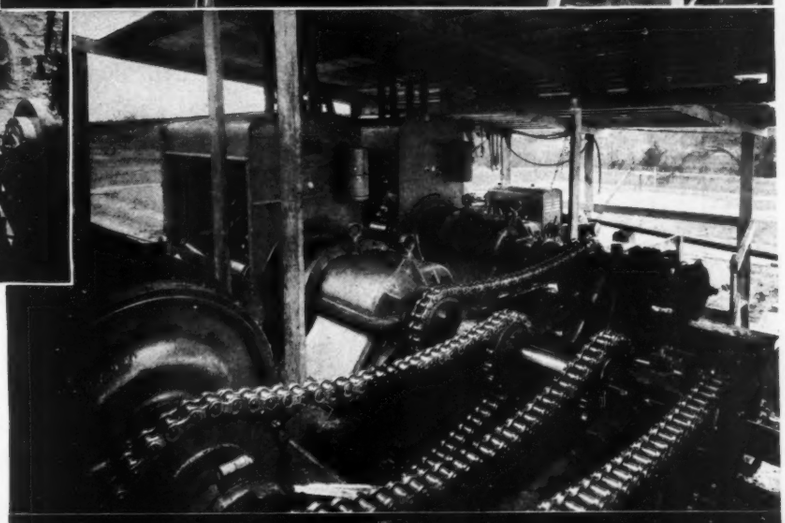
WITH

TWIN DISC CLUTCHES









A small part with a big reputation for performance—Twin Disc is the one oil field clutch that is accepted by pioneer oil field operator, engine maker, and rig builder alike.

Twin Disc Clutches have definitely proven their ability to harness the power of the prime mover to the driven rig. In rotary drilling, heavy duty pumping and hoisting they provide simplified, dependable control. Scientifically designed and precision built—they are at once big enough and strong enough to carry peak and shock loads with safety.

Seventeen years' close cooperation with the oil field industry in solving its clutch problems makes the advice of Twin Disc Engineers decidedly valuable to you. Write for specific recommendations. Engineering data on request.

TWIN DISC CLUTCHES

TWIN DISC CLUTCH COMPANY

1328 RACINE STREET — RACINE, WISCONSIN

SALES AND SERVICE OFFICE

310 E. 4TH STREET — TULSA, OKLAHOMA

BOOTHS 432-434 OIL WORLD EXPOSITION, HOUSTON

OTIS PRESSURE CONTROL, INC.

Cordially invites you

to visit the Otis exhibit at Oil-World Exposition, Houston, October 11-16. Booths 1324-1326.

WE WILL DISPLAY THE FOLLOWING EQUIPMENT:

- ✓ 1. Otis Square Kelly Drilling Head and Pressure Operated Union
- ✓ 2. Otis Snubbing Equipment for the running and pulling of pipe under pressure
- ✓ 3. Otis Removable Bottom Hole Choke
- ✓ 4. Otis Mixing Valve
- ✓ 5. Otis Tubing, Drill Stem and Casing Plugs
- ✓ 6. Otis Closing Tool

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PRESSURE CONTROL – OTIS – SERVICE – EQUIPMENT
TRADE-MARK

TOWER PETROLEUM BLDG. DALLAS, TEXAS

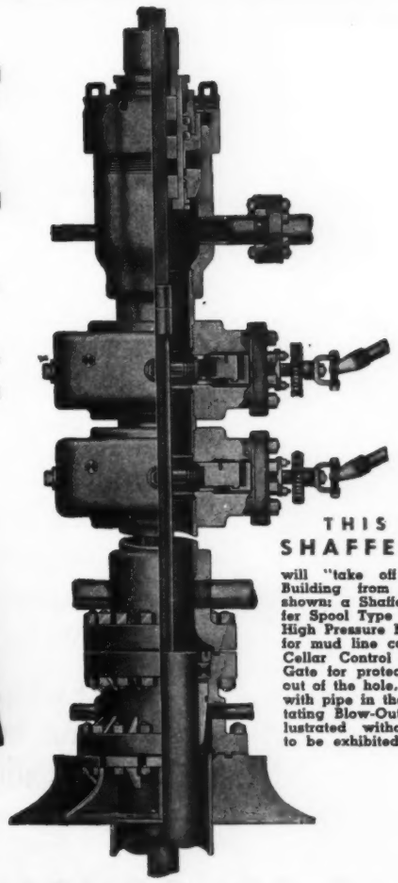
Oklahoma City, Okla.
Ada, Okla.
Glendale, California
Houston, Texas
Kermit, Texas
Wellsville, N. Y.
Hobbs, N. M.
Rodessa, La.

TAKE OFF THAT WORRIED LOOK

TODAY there is no need for any oil man to "wear a worried look" when drilling under pressure, or when there is danger of blow-outs.

For every well, from the time of spudding-in until the oil is turned into the tank, there is a Shaffer High Pressure Hook-Up that provides complete safety and does not interfere with operations.

If you attend the Houston Oil Show, don't fail to see the operation of Shaffer Cellar Control Gates under pressure, as well as other interesting demonstrations. If you stay at home, find out how to prevent "worry" by referring to the Composite Catalog, or writing for the free Shaffer Catalog.



THIS TYPICAL
SHAFFER HOOK-UP

will "take off that worried look". Building from the bottom up are shown: a Shaffer Landing Base; Shaffer Spool Type Landing Head; Shaffer High Pressure Mud Cross with outlets for mud line connections; two Shaffer Cellar Control Gates, one a Master Gate for protection when the pipe is out of the hole, and one for protection with pipe in the hole. The Shaffer Rotating Blow-Out Preventer (top) is illustrated without the new Stripper to be exhibited at the Houston Show.

SHAFFER TOOL WORKS

BREA, CALIFORNIA
California Service Shops: Santa Fe Springs, Taft, Ventura

HOUSTON, TEXAS
6006 Navigation Blvd.

Gulf Coast Rental Stocks:
STONE OIL TOOL COMPANY
1207 Maury Street
Houston, Texas

OKLAHOMA CITY, OKLA.
1129 S. E. 29th Street

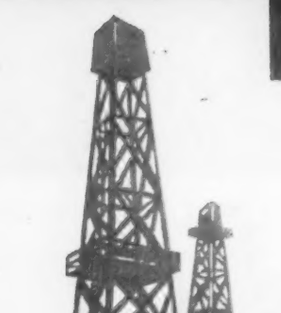
EXPORT REPRESENTATIVES:
Oil Well Supply Company, New York, N. Y., U.S.A.

SHAFFER

HIGH PRESSURE DRILLING AND CONTROL EQUIPMENT
FISHING TOOLS THAT EXCEL

Described in detail on Pages 1548 to 1576 of the 1937 COMPOSITE CATALOG

LE ROI ENGINES



DEPENDABLE POWER FOR OIL FIELD SERVICE

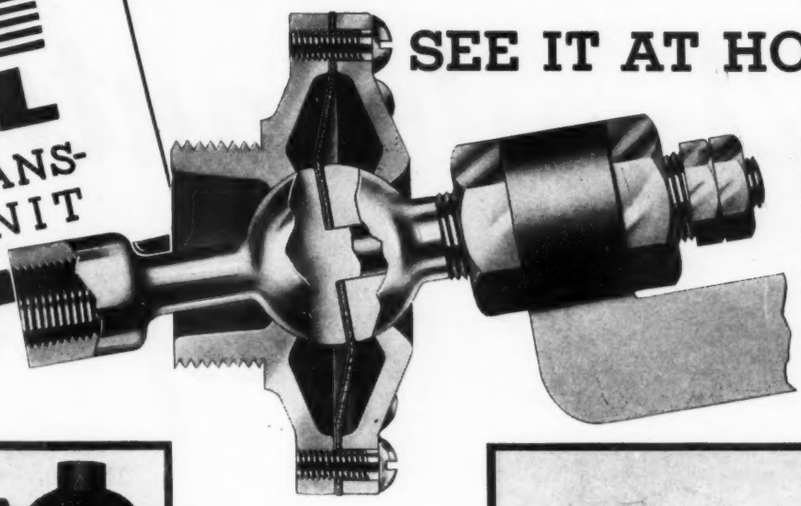
Le Roi Valve-in-Head Engines are specially designed for the dependable operation required for oil field service. A complete range of sizes—for oil well pumping and drilling—is available.

Le Roi operating speeds are conservative, thus contributing to long life and low maintenance costs. Units can be equipped to burn natural gas, butane, or gasoline . . . Write for complete information.

Le Roi Company also builds engines for pipe line pumping stations and miscellaneous oil field service, sizes ranging from 4 to 400 H.P.—Engine driven generator units sizes ranging from 1½ to 200 K.W.—A. C. or D. C.

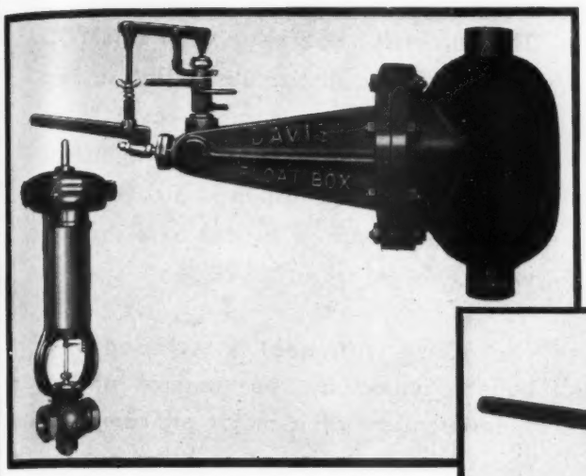
LE ROI COMPANY—MILWAUKEE, WISCONSIN
Branch Office and Warehouse . . . TULSA, OKLAHOMA

The DIA-BALL PACKLESS TRANSMISSION UNIT

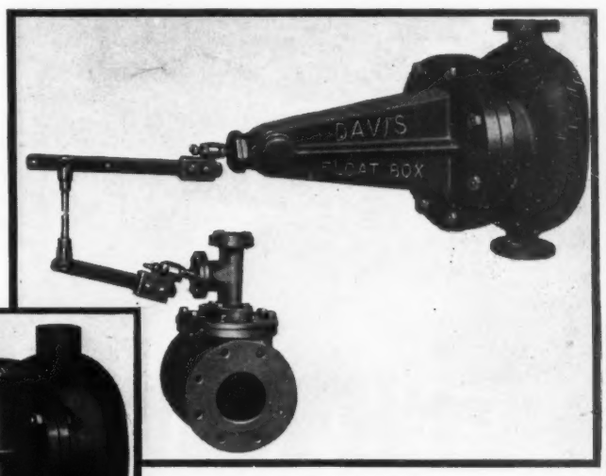


SEE IT AT HOUSTON:

The new Davis "DIA-BALL" patented packless transmission unit for float boxes and control valves will be on display at Booth 728-730 in Houston, Oct. 11-16. See for yourself why this construction ends maintenance nuisance and completely stops leakage. Or write for descriptive literature.

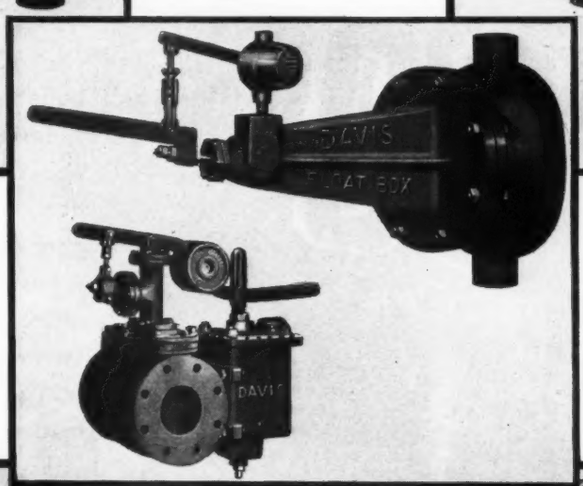


No. 164 D—*(Below)* The last word in modern control! Packless float box with explosion-proof switch actuating No. 97 SB solenoid valve with explosion-proof solenoid case.



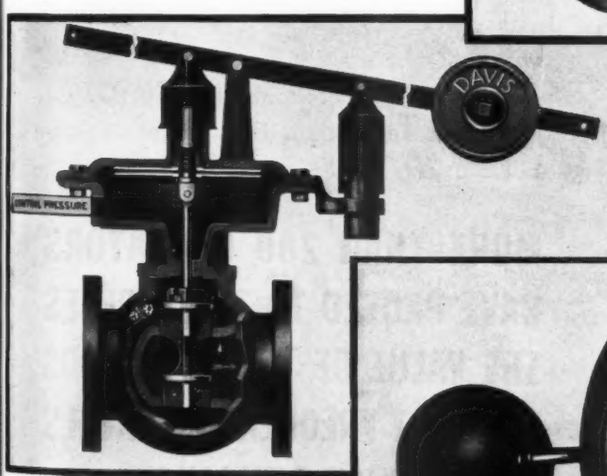
No. 162 D—*(Above)* Packless float box with pilot valve actuating No. 14 diaphragm motor valve.

No. 330— *(Below)* This versatile valve can be used either as a vacuum or back pressure regulator. Here it is shown connected for vacuum service.

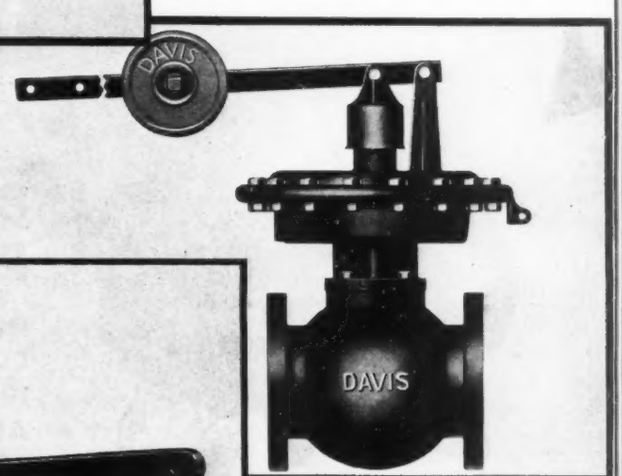


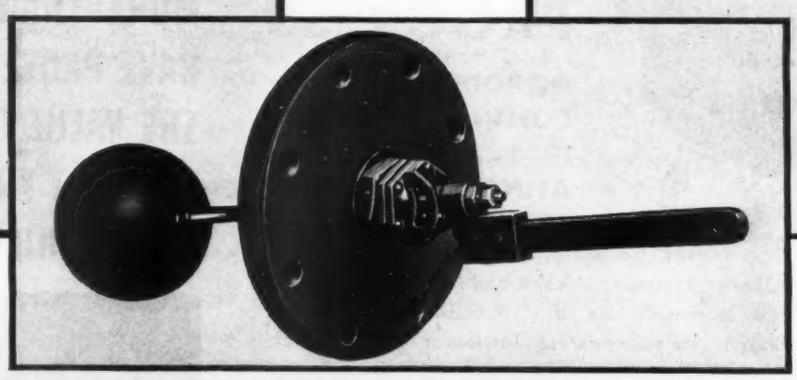
No. 161 D— *(Above)* Packless float box actuating No. 66 B packless balanced valve.

No. 330— *(Below)* This shows position of counterweight when No. 330 is used as a back pressure valve. When desired it can be equipped with dash pot as on unit at left.



No. 168 D—*(Below)* A simple float and lever tank unit featuring the DIA-BALL Packless transmission unit.





Mid-Continent representative:
Westcott & Greis, Inc.
Tulsa, Houston, Dallas

West-Coast representative:
Bert W. Paul
Los Angeles

DAVIS CONTROL UNITS FOR THE OIL INDUSTRY

DAVIS REGULATOR CO., 2543 S. WASHTENAW AVE., CHICAGO, ILL.

"...stantial ...ng to us!"

"The successful operation of the TOTCO instrument means a substantial saving to us. Every failure is more costly to us than the manufacturing of the instrument for the reason that our drilling speed is controlled by the information which we get from TOTCO."

The above statement is included in a bulletin issued by the general drilling superintendent of a major oil company. This bulletin was issued to bring out the economical necessity for taking the proper care of TOTCO equipment.

His opinion is concurred in by many officials of other major oil companies who have used the information provided by TOTCO, and have *developed methods* to take advantage of this information.

The TOTCO Drift Recorder determines verticality *accurately, dependably, quickly, safely, easily* and *economically.* Use TOTCO records to develop methods to get straight holes at *less cost!*

8 YEARS OF PROGRESS

INTRODUCED IN MID-CONTINENT IN MAY, 1935 . . . NOW OPERATING IN 10 STATES

California oilfields in 1929 . . . Kansas, Colorado, Arkansas, Louisiana, New Mexico, Montana, Oklahoma, Texas, Wyoming, Alaska and Canada oilfields in 1937. That's the history of the increasing use of TOTCO Drift Recorders in eight short years. *There's a reason! Ask your nearest Distributor or write direct.*

MORE THAN 200 OPERATORS HAVE PROVED TO THEMSELVES THE VALUE OF TOTCO RECORDS TAKEN AT FREQUENT INTERVALS WHILE DRILLING

TOTCO RENTALS* AND SERVICE

Carson Machine & Supply Co., 1603 S. E. 29th St., Oklahoma City, Oklahoma *and all Branches*

Houston Oil Field Material Co., Inc., 1524 Maury Street, Houston, Texas *and all Branches*

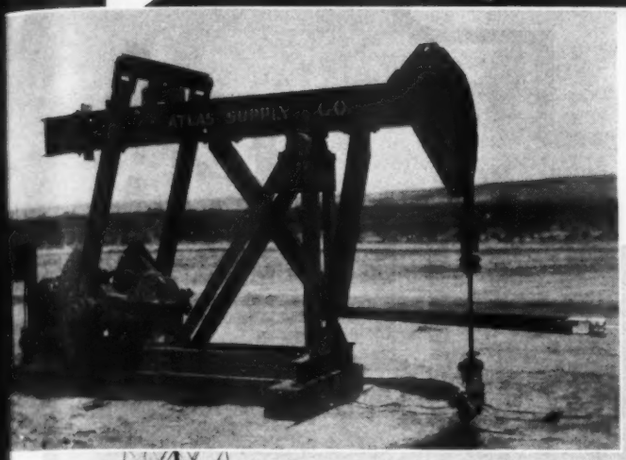
R. D. Wallace, Continental Bldg., Casper, Wyoming, *Servicing Rocky Mountain Area*

California Machinery & Supply Co., 2449 Hunter St., Los Angeles, California

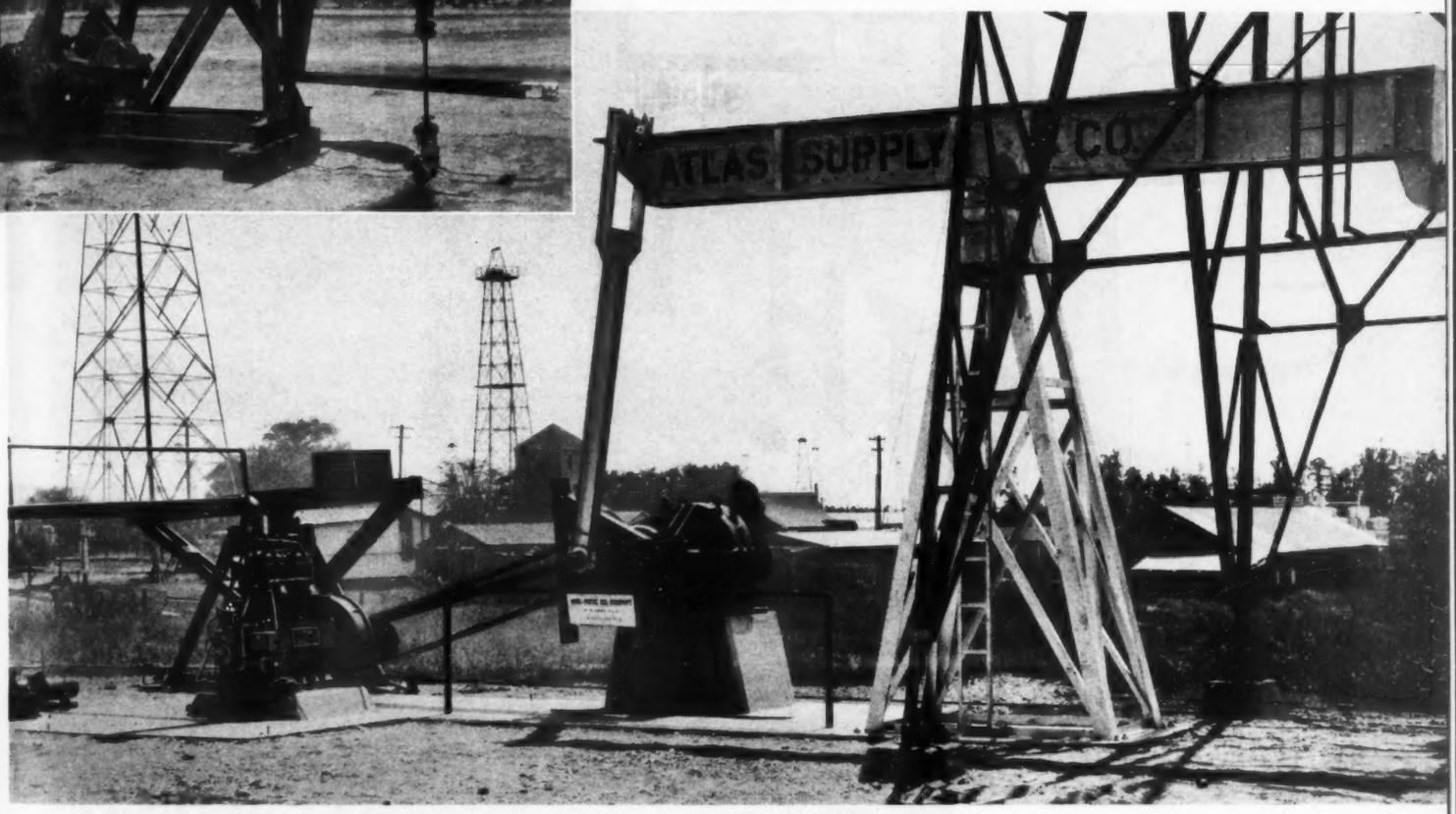
**TOTCO Drift Recorders are leased on a monthly rental basis. While in service, they are inspected at intervals by our experienced Service Experts*

SEE OUR EXHIBIT AT THE OIL-WORLD EXPOSITION

ATLAS PUMPING UNITS



(Left) AN ATLAS INSTALLATION PUMPING TWO 2150 FT. WELLS IN CRANE COUNTY, TEXAS. No. 507 Atlas Double Reduction Pumping Unit with Vee attachment, (2" tubing—1¾" plunger—⅞" rods—motor drive).



AN ATLAS INSTALLATION PUMPING FOUR 3700 FT. WELLS FOR IOWA-PAYNE OIL CO., IN GLADEWATER, TEXAS. No. 2502 Atlas Double Reduction Pumping Unit with back side crank. (2" tubing—1¾" plunger—⅞" rods.) Powered by a 7½" x 9" Weber Two-Cylinder, Two-Cycle, Convertible Vertical Gas Engine.

Above are illustrated two of the 65 available COMBINATIONS OF ATLAS PUMPING UNITS, one of which will ECONOMICALLY serve YOUR PARTICULAR CONDITION. There's a unit for every drive, depth or condition. Available in either single or twin crank combinations for mounting on steel or concrete bases. Single and double reduction gear reducers provide units for any type drive whether it be electric motors, high speed, medium speed or slow speed engines. Get an Atlas bid on your next project.

GENERAL OFFICES: MUSKOGEE, OKLAHOMA

Branch Stores:

KANSAS—Bushton, McPherson, Russell, Wichita*

OKLAHOMA—Ada, Blackwell, Chandler, Fittstown, Muskogee, Oklahoma City, Seminole, Tulsa*

TEXAS—Greggton, Gladewater, Fort Worth, Kermit, Odessa, Overton, Wink, Houston*

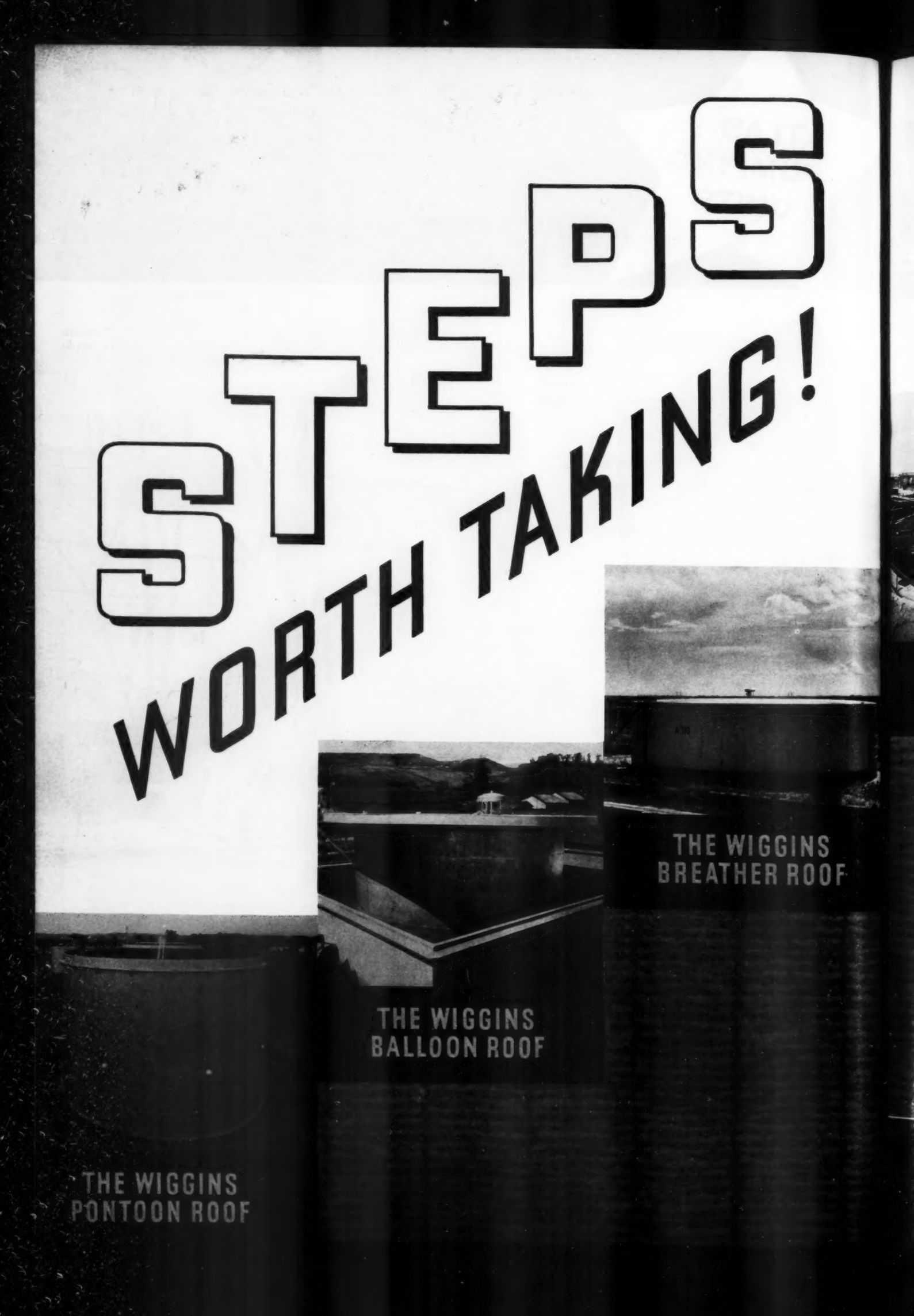
*Offices Only

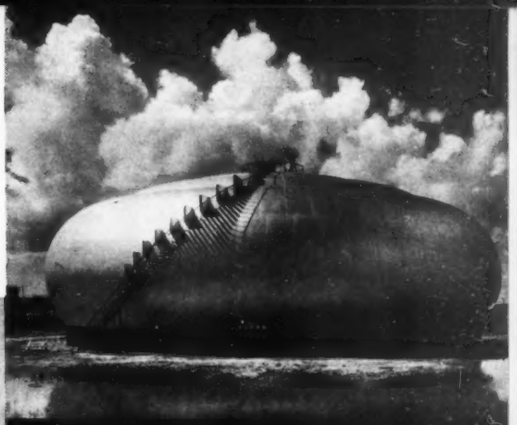
ATLAS SUPPLY CO.

GENERAL OFFICES
MUSKOGEE, OKLA.

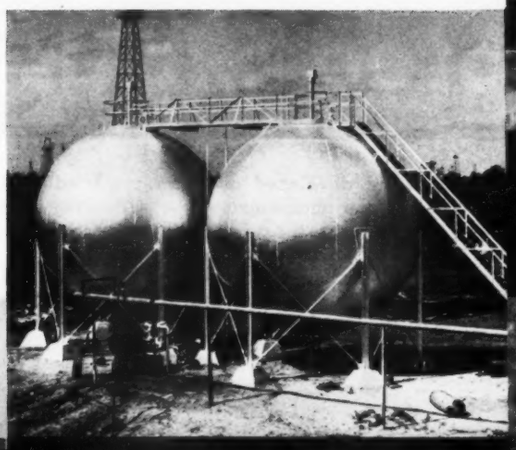
BRANCHES LOCATED AT PRINCIPAL POINTS IN MID-CONTINENT

STEPS WORTH TAKING!





THE HORTONSPHEROID



THE HORTONSPHERE

THE WIGGINS BALLOON

THERE is never any question about being headed in the right direction when you take steps to reduce the loss of vapor from oil you are handling in tanks. In crude, excessive evaporation means a lower yield of premium grade products. In refineries, it causes a direct reduction of plant efficiency. In finished motor fuels, it leads to unsatisfactory performance and consequent loss of good will.

The steps to take to protect yourself against such losses are simple, direct, and of proven effectiveness. For any given tank installation, you can get specially developed modern equipment that greatly reduces or completely eliminates these common sources of loss. How to select best suited units . . . how to apply them . . . and how much they save are all matters worthy of your most careful attention. Our nearest office will be glad to give you complete information.

CHICAGO BRIDGE & IRON COMPANY

Dallas	1441 Liberty Bank Building	Chicago	2128 Old Colony Building	Philadelphia	1615-1700 Walnut Street Building
Houston	2919 Main Street	Detroit	1514 Lafayette Building	Boston	1517 Consolidated Gas Building
Tulsa	1606 Hunt Bldg.	Cleveland	2204 Rockefeller Building	San Francisco	1054 Rialto Building
Birmingham	1536 North Fiftieth Street	New York	3347-165 Broadway Building	Los Angeles	1423 Wm. Fox Building

FABRICATING PLANTS in Birmingham, Chicago, and Greenville, Pa.

THE WORLD'S LARGEST I
is Devoted Exclusively to the P

Conceived, created and developed as a non-profit, educational institution, by the leaders of a great world-wide industry and the manufacturers, distributors and scientists who serve it, the International Petroleum Exposition is the largest exposition in the world devoted to a single industry. Its sole purpose, its one objective, has been to scientifically advance the methods, improve the machinery and train the men in every branch of the oil business. Today it is endorsed by every major government department and every association, bureau and scientific and trade organization affiliated with the oil industry—is attended by key men in the oil industry throughout the world.

Started in 1923, in a carnival atmosphere, the first exposition was held on the streets of Tulsa. In 1924 the show was moved to private property and assumed the proportions and seriousness of business enterprise. In 1927, having outgrown its facilities, the exposition was housed in an exclusive new plant to which facilities have been added each show. The 1938 Exposition will utilize every inch of available space in its 20 acres of land and its battery of mammoth exhibit buildings, and 40,000 sq. ft. of new outside exhibit space.

THE RECORD

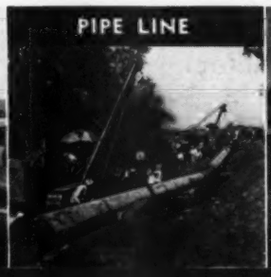
Year	Exhibitors	Attendance
1923	27	14,000
1924	86	27,000
1925	102	38,512
1927	189	67,832
1928	258	89,316
1929	289	100,314
1930	312	112,605
1934	326	121,398
1936	397	152,011
1938 (Est.)	450	200,000

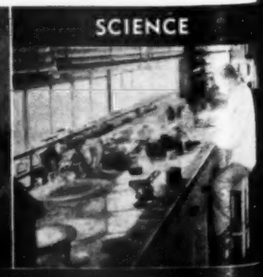
Has Never Lost an Exhibitor Because of Unsatisfactory Service or Treatment

THE WORLD'S FIRST, OLDEST, GREATEST OIL SHOW

The great improvements in equipment and methods which science, engineering and practical experience have developed in the last two years, will be displayed, demonstrated and discussed at the 1938 International Petroleum Exposition. From aerial photography, seismograph and core drill, to portable rotary drilling equipment, modern pumping units; the latest in refining methods and pipe line operations will be here for your inspection. Plan now to attend the big Tulsa oil show and visit adjacent production, refining, pipe line and scientific operations. For complete information, write:

W. G. SKELLY, President, INTERNATIONAL PETROLEUM EXPOSITION, TULSA, OKLAHOMA, U.S.A.





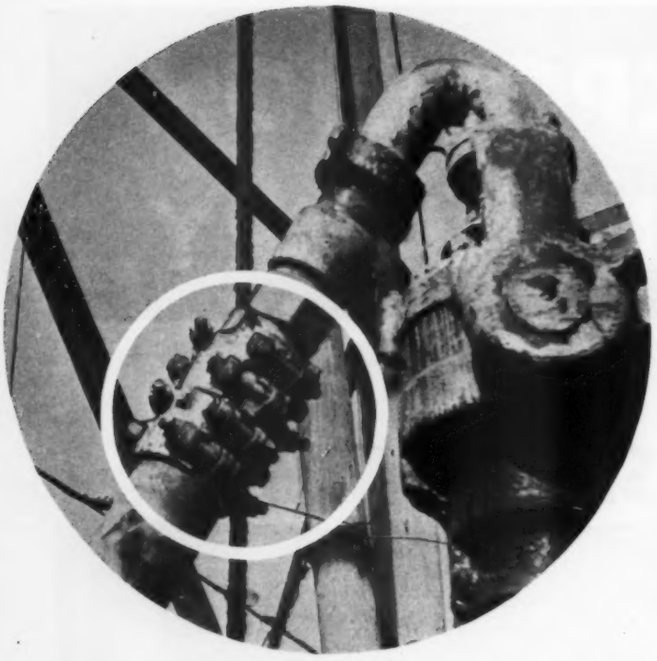
15 YEARS OLD—Has Never Changed i

INDUSTRIAL EXPOSITION
PETROLEUM INDUSTRY

May, 14-21 TULSA U.S.A. 1938

INTERNATIONAL PETROLEUM EXPOSITION

its Name, Location, Policy or Purpose!



For *Trouble-Free* Service

AT THE POINT OF GREATEST STRESS!

At no point on the line is punishment more severe... and failure more common... than the swivel connection of the hose to the "kelly." It is here that you need couplings that have proved their worth in the toughest kind of drilling service...

"BOSS TRI-DUPLEX" ROTARY HOSE COUPLINGS

These couplings meet every requirement for oil well drilling in a way that surpasses all previous accomplishments. They are without question the most powerful couplings ever made for this service, and are *guaranteed to be leak-proof, seepage-proof and blowoff-proof.* Made in two styles . . . TD and Z . . . they represent the ultimate in strength, stamina and dependable performance.

GIANT STYLE Z

"BOSS GIANT TRI-DUPLEX" Style Z Rotary Hose Couplings have been developed to withstand the highest pressures encountered in oil well drilling, and to provide guaranteed failure-proof service under excessive stresses, strains and vibration. The 2½" Style Z Male Coupling has been tested under hydrostatic pressure to 11,100 lbs. per square inch; the 3" to 10,200 lbs. per square inch . . . figures far in excess of any probable requirements.

The GIANT Style Z Coupling has the revolutionary Dixon Offset Clamp feature, insuring a *perfect seal* under all conditions and distributing the clamping pressure *evenly* over the entire circumference of the hose.

Style Z Male Couplings are made to fit hose ends of 2½", 3", 3½" and 4" I. D. — Female to fit hose ends of 2½" and 3" I. D. Clamps accommodate outside diameters from 4½" to 7".

REGULAR STYLE TD

These couplings have been well known to the oil industry since 1928. Designed and built to withstand the rigorous service which so frequently spells failure for couplings of lesser quality, they will quickly demonstrate their economy and dependability under the most trying conditions.

Like the GIANT STYLE Z, STYLE TD Couplings are guaranteed to be proof against leaks, seepage and blow-offs. They also incorporate the Dixon Offset Clamp principle, the last word in clamping efficiency.

Style TD Male Couplings are made to fit hose ends of 2", 2½", 3" and 3½" I. D. — Female to fit hose ends 2", 2½" and 3" I. D. Clamps accommodate outside diameters 3½" to 5⅞".

★ ★ ★

Give the toughest jobs to the "BOSS"! Your Jobber or Supply House can furnish "BOSS" Couplings and other dependable DIXON products promptly. Ask for catalog or write for complete information.

GIANT STYLE Z

DIXON VALVE & COUPLING CO.

MAIN OFFICE AND FACTORY

LOS ANGELES **PHILADELPHIA** **HOUSTON**

THE ORIGINAL FOUR-WHEEL-DRIVE TRUCK

POSITIVE TRACTION...

Insures Outstanding Performance

POWER — scientifically distributed over four wheels — instead of only two. That's the engineering principle — the positive traction — that has singled out FWD for outstanding performance — enduring service — unusual economy.

Stress on each driving axle is reduced by half. 100,000 miles and more per set of tires is not unusual. Only 11.8% of the developed power is lost in friction — an amazing performance indeed!

The FWD is a safer truck. It is more economical to operate. It will serve you longer. Not because we say so. But because of exclusive FWD engineering superiorities *which are susceptible of proof.* In the world's toughest trucking — in cross-country oil field and utility construction — in almost impassable timber lands—thru Northern Snow Drifts that would baffle anything but *Four-Wheel-Drive* construction — *Positive Traction* has given FWD an enviable reputation for outstanding performance.

Controlled Power

FWD CONTROLLED POWER GIVES YOU

- Greater Safety
- Faster Service
- Greater Dependability
- Wider Range of Operation
- Operating Economy

FWD

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory, KITCHENER, ONTARIO

FOUR-WHEEL-DRIVE
TRUCKS

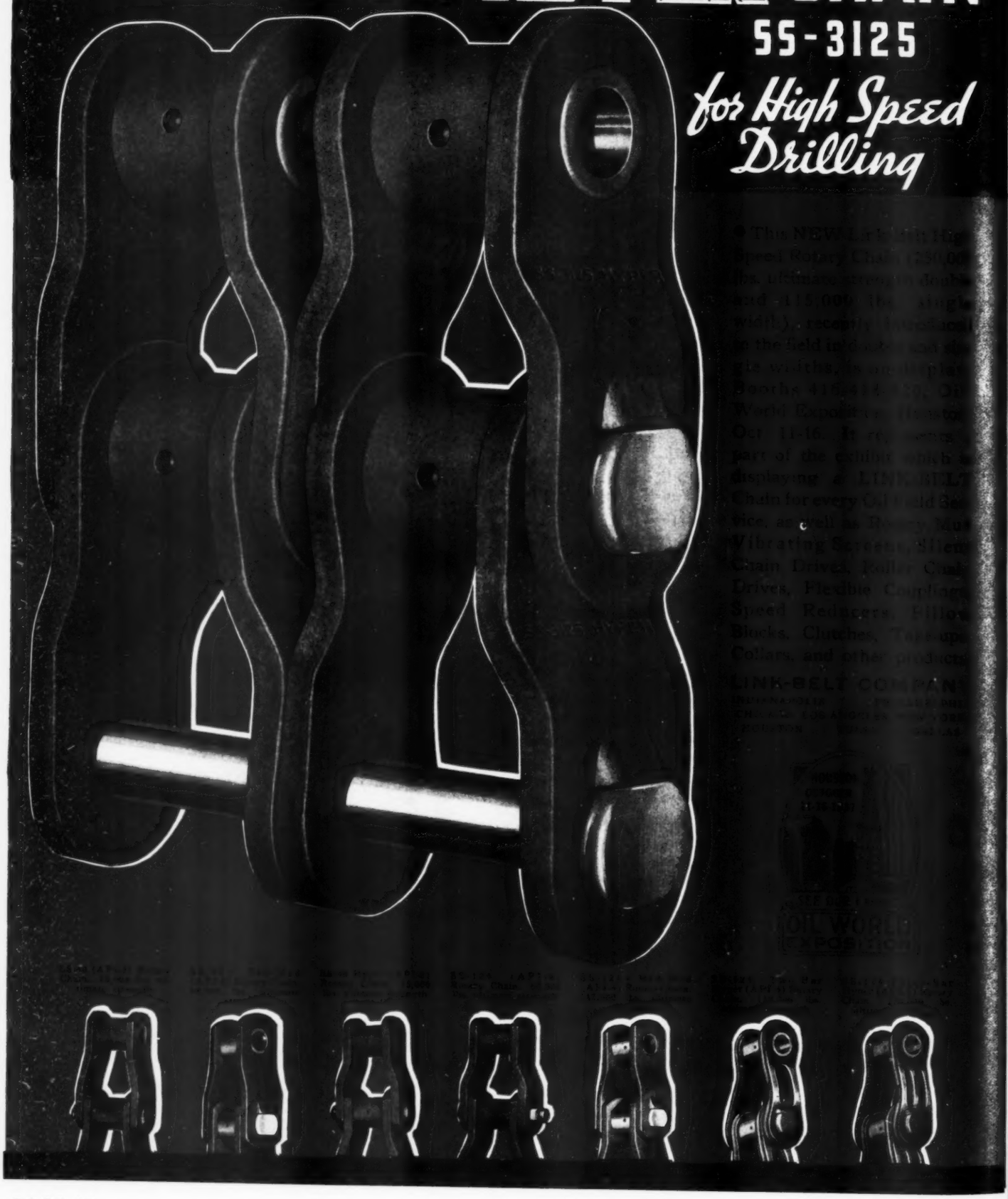
THE SAFEST TRUCK ON THE HIGHWAY

A New

LINK-BELT HYPER CHAIN

55-3125

for High Speed Drilling



● Ready for shipment . . . this modern heavy-duty portable drilling rig is going to a major drilling contractor, for service where the digging is hard and the holes are deep. On these jobs they must have consistent performance, with minimum shut-downs.

This rig is equipped 100% with LINK-BELT double width Silverlink Roller Chain (2-½" pitch RCD-250S), and LINK-BELT Sprockets.

Silverlink Roller Chain is the Standard among roller chains today with the majority of Drilling Contractors and Producing Companies throughout the rotary fields of the world.

Link-Belt Company, Indianapolis, Philadelphia, Chicago, Los Angeles, New York, Houston, Dallas and Tulsa.

See our Exhibit—Houston Oct. 11-16

LINK-BELT
Silverlink
ROLLER CHAINS

OIL COMPANY SAVES 20%

A COMPLETELY INSULATED HEATING SYSTEM PAYS FOR ITSELF IN ACTUAL SERVICE AT LARGE OCEAN TERMINAL.

Above—Pipe line in foreground is part of the extensive steam-heating system for the storage tanks.

The Shell Union Oil Corporation knows that Carey Heat Insulations are a good investment. The fuel costs records, showing reductions of 20%, prove it. Yet this is nothing unusual. Records of equal and greater savings are numerous throughout the oil industry.

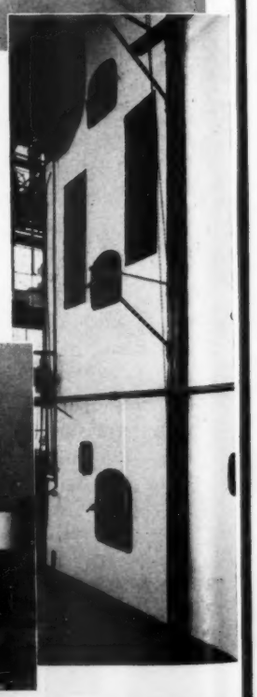
From the Shell boiler house, a far-flung system of pipe lines transmits 380°F steam to the farthest point of the system with a heat loss of only 2°F. This is real efficiency, made possible by the correct application of Carey Insulations. The walls of the boilers are insulated with 2-inch Carey 85% Magnesia Blocks; the pipe lines, ranging from 2 to 12 inches in diameter, are insulated with Carey 85% Magnesia Pipe Covering.

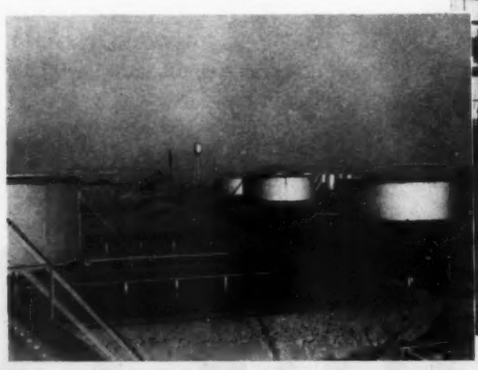
Carey produces insulations for every requirement of the oil industry—for Stills, Water Tube Boilers, Stack Linings, Feed Water Heaters, Breechings, Ducts, Turbines, Absorbers, Pre-Heaters, Evaporators, Cooling Towers, Compressors, Towers, Drums, Condensors, Heat Exchangers.

Above—Loading Rack at Shell Union Oil Terminal—a Carey insulated steam line extends out along the pier.

Right—The Shell Union Oil heating plant, consisting of two, 250 H.P. Heine boilers, Carey insulated.

Below—A few of the 24 steel storage tanks, with capacities of 5,000 to 80,000 barrels each—pipe line in foreground, a part of the extensive steam heating system for the tanks.





Back of the success of Carey Insulations are over 50 years of practical experience, covering contact with every insulating problem. Profit by this experience to reduce your fuel costs. Carey service is available through a nation-wide organization. Write for Insulation Handbook—Address Dept. 34.

THE PHILIP CAREY COMPANY

Dependable Products Since 1873

LOCKLAND, CINCINNATI, OHIO

BRANCHES IN PRINCIPAL CITIES

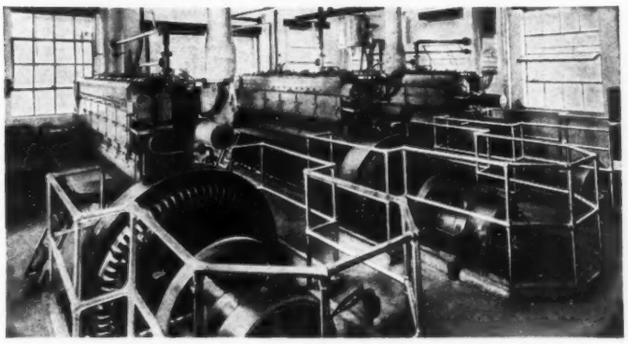
Carey Maqnesia-Asbestos HEAT INSULATIONS

Night & Day THE YEAR ROUND

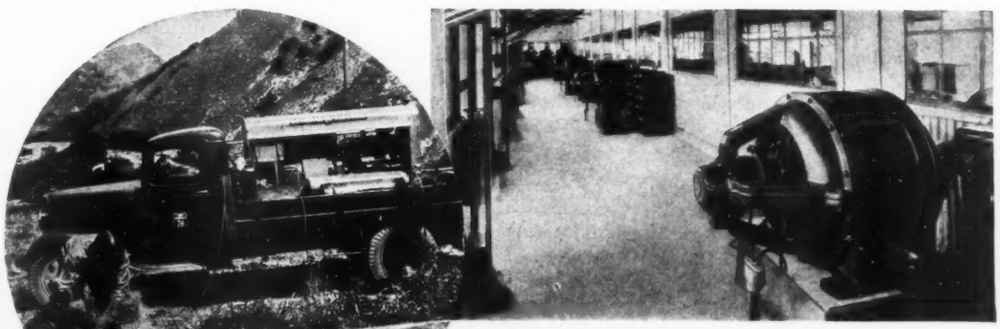
G-E Equipment helps keep the oil flowing

ON this page are typical examples of properly applied, dependable G-E equipment in pipe-line service. It is the equipment that helps keep the oil or gasoline flowing night and day, the year round. G-E engineers will be glad to discuss your particular problems with you, at your convenience. Call our nearest representative for further information. General Electric, Schenectady, N. Y.

For many centrifugal-pump drives, G-E squirrel-cage induction motors are highly successful. They are famous for their ability to give low-cost service over long periods of time. These two 350-hp induction motors, in a Texas pipe-line pumping station, are driving centrifugal pumps located on the other side of the fire wall



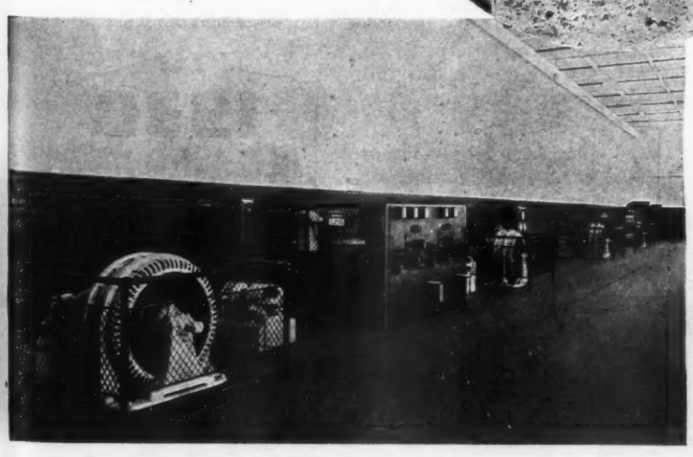
Where central-station power is not economically available, the diesel-engine-driven generator is an excellent source of power for pipe-line motors. These three G-E generators are giving dependable service in the same station in which are located the motors illustrated above



Oil pipe line near San Luis Obispo, Cal., being arc-welded with a G-E gas-engine-driven welder. Miles of pipe can be laid quickly and economically by the use of arc welding. G-E welding equipment makes possible a faster and better job

Four G-E low-speed synchronous motors driving reciprocating gasoline pumps in a Des Moines, Iowa, pumping station. Besides being highly efficient in operation, synchronous motors can cut power bills because of their power-factor-improvement characteristic

The high-starting-torque and adjustable-varying-speed characteristics of G-E type MT wound-rotor motors often make them the correct choice for driving large reciprocating pumps. The four G-E wound-rotor motors shown here are driving such pumps at Lima, Oklahoma



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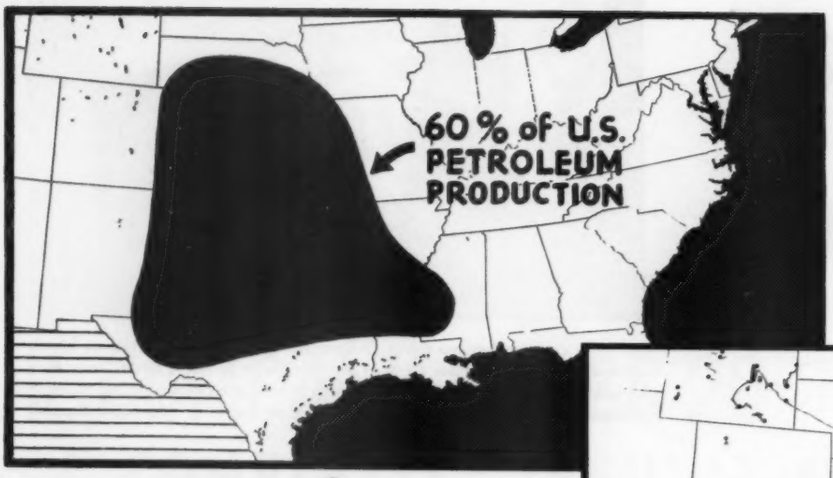
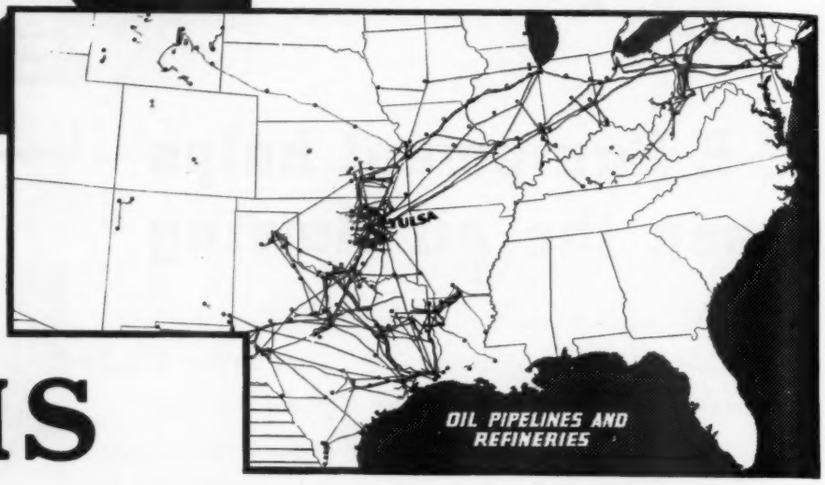
GENERAL ELECTRIC



Note Tulsa's Central Location in WORLD'S RICHEST OIL-PRODUCING AREA

• • •

NATION'S OIL PIPE-LINE AND REFINING SYSTEM



Why TULSA IS "THE WORLD'S OIL CAPITAL"

1. Tulsa has MORE OIL COMPANIES than any other city. More than 40 major oil companies, and over 400 smaller oil companies, have headquarters' offices in Tulsa. These companies represent production, pipe lines, refining and marketing throughout the Mid-Continent, Gulf Coast, Rocky Mountain, Central and Eastern fields.
2. WORLD OIL PRODUCTION centers at Tulsa. Tulsa is *centrally located* in the Mid-Continent oil area, which is producing approximately 60% of the nation's oil, and 40% of the world's oil. This area also is drilling 51% of the nation's wells, and has 50% of the nation's known oil reserves. The new oil development in Illinois further strengthens Tulsa's position with relation to oil activity. The oil companies are finding it entirely practical to direct their activities in the Illinois field, from headquarters' offices in Tulsa.
3. NATION'S PIPE-LINE AND REFINING NETWORK shows Tulsa at hub. Nearly all the major pipe lines pass within a few miles of Tulsa, and a large majority are controlled from Tulsa headquarters.
4. Tulsa companies control 2/3 of NATION'S NATURAL GASOLINE PRODUCTION.
5. Tulsa is WORLD'S OIL FINANCING CENTER. Tulsa banks and bankers are the world's leading specialists in oil financing.
6. Tulsa is HEADQUARTERS FOR TECHNICAL INFORMATION on oil and gas. This information is available through the world's leading oil associations which have their central offices in Tulsa. They include—Mid-Continent Oil & Gas Association, Independent Petroleum Association, Western Petroleum Refiners Association, Natural Gasoline Manufacturers Association, and American Association of Petroleum Geologists.
7. THE INTERNATIONAL PETROLEUM EXPOSITION is held bi-annually at Tulsa and is attended by the key executives and purchasing agents of oil companies throughout the world. It is the world's oldest and largest oil show.
8. OIL INDUSTRY'S PURCHASING POWER IS CONCENTRATED at Tulsa. Tulsa companies spend approximately $300,000,000.00 annually for oil field equipment and supplies.

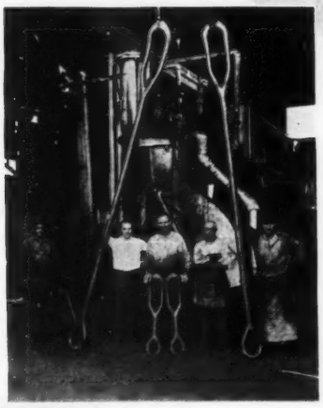
For further information write the Tulsa Chamber of Commerce.

1938 INTERNATIONAL PETROLEUM EXPOSITION TULSA MAY 14-21

TULSA

Oil Capital of the World

CREWS to work WITH BJ TOOLS



Above: Large or small, BJ Tongs lend themselves to rhythmic, safe handling — a BJ Snapon Tubing Tong, and a BJ 10" O.D. Rotary Tong. See picture (1) below for the 10" tong in service.

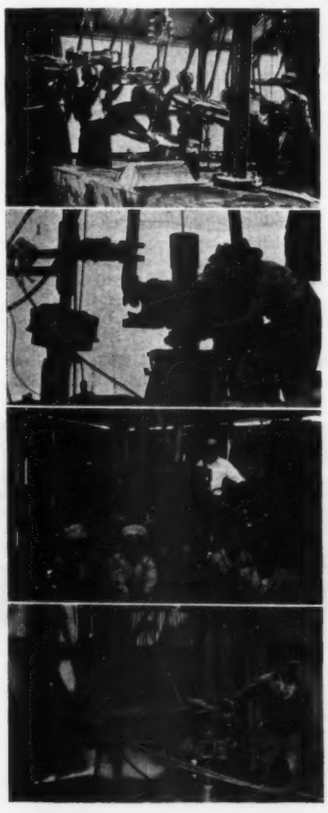
Whether you need BJ Weldless Links in the 14-foot size for deep drilling, or the 4-foot size for pulling long strings of tubing — they provide a safety note that will be appreciated by your crews.

The perfect balance — easy handling — the freedom from danger assured by BJ Tongs, Elevators and Hooks — bring rhythm of motion to the derrick floor. In Burma or Bahrein — in California or on the Gulf Coast — fast moving crews work in rhythm with a swiftness possible only with BJ Drilling and Production Tools. Are you providing *your* crews with this modern safety and convenience?

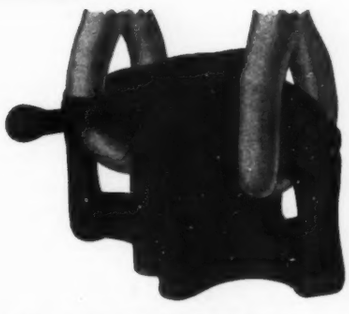
BJ EXTRA HEAVY ROTARY AND CASING TONGS . . .

retain all of the easy-handling features of lighter weight BJ Tongs, plus new, large handles, and a latch with handle. Their great strength makes them safe for use on Full Hole tool joints, and for breaking-down or making-up drill collars and core barrels, but they are easily operated by one man.

(At right) (1) In Burma they know the value of rhythm when they use 8 BJ Tongs every round trip—one set each of 5", 6", 8" and 10". A close-up of a 10" tong (for 10¾" tool joint) is shown in picture set at angle above, right. (2) In Texas, as casing is set with a BJ Side-Door Slip Casing Elevator. Although strong enough for any string, one man in the derrick can "swing it." (3) They use turbans instead of steel hats, but some of these native Indian crews "have got rhythm" when they take hold of BJ Tongs. (4) This crew is moving so swiftly that a fast lens will not "stop 'em"—note that BJ Tongs are contributing to fast work on this California well.



Look up any modern derrick, and the chances are 10 to 1 that you will see a BJ Triplex Hook playing its part in speeding up the work safely.



BJ Type A CENTER LATCH DRILL PIPE ELEVATOR

This is the last word in elevators for Heavy Duty Service. Check these features: the fully heat treated body withstands upsetting by tool joints; the hidden latch is safe from accidental opening by the elevator link when "tailing in" a joint; the smallest size elevator takes 2¾" BJ Weldless Links; long, guarded horns prevent injuries and provide a quick, safe grip for fast operation; the standard grease gun connection permits easy lubrication and insures longer life of hinge pin; permanently attached link retainers hold the links safely and provide additional strength; the horizontal latch is positive and easy to operate, but is not affected by vertical shocks and jars.

BYRON JACKSON CO.

FORT WORTH • LOS ANGELES • NEW YORK

ANNOUNCING....

MARMON-HERRINGTON ENGINEERS PRESENT
MOST IMPORTANT DEVELOPMENT IN TRACTOR DESIGN

Now you can obtain a powerful track-laying tractor that maintains an average road speed of 25 miles an hour and better. A tractor which combines with this unprecedented road speed, a smoothness and quietness of operation, an ease of riding and an economy of fuel consumption never before possible in track-laying tractors.

This revolutionary performance is made possible by new and exclusive features designed and developed by Marmon-Herrington engineers. Foremost is an entirely new type of track which combines the strength of steel with the cushioning effect of rubber, eliminating the noisy clatter and vibration inevitable with steel block type of track. Increases mileage of track as much as 500%, and permits operating tractor on any highway. Hull is watertight, and the unit will operate in more than 36 inches of water. Center of gravity is so low the tractor can be turned on any hill it climbs. Can be pivot-turned safely either from a standing position or from its highest forward speed.

Elimination of friction in the driving mechanism results in greatly increased fuel economy, an average of 4 to 5 miles per gallon of gasoline being obtainable. The use of standard automotive parts throughout the entire construction makes the tractor easy to service. All parts, including the engine, are readily accessible. Offered in three models: TA-20, TA-30 and TA-40 with rated draw bar horse power of 20, 30 and 40 respectively. Complete description is yours for the asking.

See Us at the
OIL WORLD EXPOSITION
HOUSTON • OCTOBER 11-16
Transportation Equipment Co. Space

MAJOR OIL COMPANIES USE ALL-WHEEL-DRIVES FOR FASTER RESULTS . . . AT REDUCED COSTS . . .

Records kept by leading oil companies show that Marmon-Herrington all-wheel-drive trucks last longer, require less servicing, provide more hours of crew time. You find Marmon-Herringtons doing the tough jobs—jobs that can't be assigned to ordinary hauling equipment. The Marmon-Herrington line includes all-wheel-drive Ford V-8's on the 112-inch wheel base passenger, light delivery and commercial car chassis, as well as on the standard truck chassis (both 4- and 6-wheel-drive); also the standard Marmon-Herrington 4- and 6-wheel-drive units with capacities ranging up to 50,000 pounds. May we send you complete descriptive literature?

MARMON-HERRINGTON COMPANY, INC., *Factory and General Offices,* **INDIANAPOLIS, IND.**
★ World's Leading All-Wheel-Drive Engineers and Builders ★

★MARMON-HERRINGTON *All-Wheel-Drive* TRUCKS
AND THE NEW *HIGH-SPEED TRACK-LAYING TRACTOR*

Dependable Power FOR OIL WELL PUMPING

LYCOMING
NATURAL GAS ENGINES

This Lycoming Model AG4-OC is one of a number of these engines that are driving pumping units in California oil fields

See the LYCOMING EXHIBIT at the OIL-WORLD Exposition

When you visit the big Oil Show at Houston, be sure to see the completely sectioned LYCOMING Gas Engine, with every moving part visible. See the many standard equipment features that reduce attendance and maintenance to a minimum—the patented Zero-Lash hydraulic valve lifters, thermostatic by-pass circulating water temperature control, heavy stationary cast iron bed plate, oil and water safety devices, etc. Get the complete story of LYCOMING Gas Engines for Oil Well pumping and other oil field power applications. See the LYCOMING Gas-Electric Generating Unit in operation. It will save you money!

Ask for the booklet on the "AG" Series, giving complete engine descriptions and specifications

LYCOMING MANUFACTURING COMPANY

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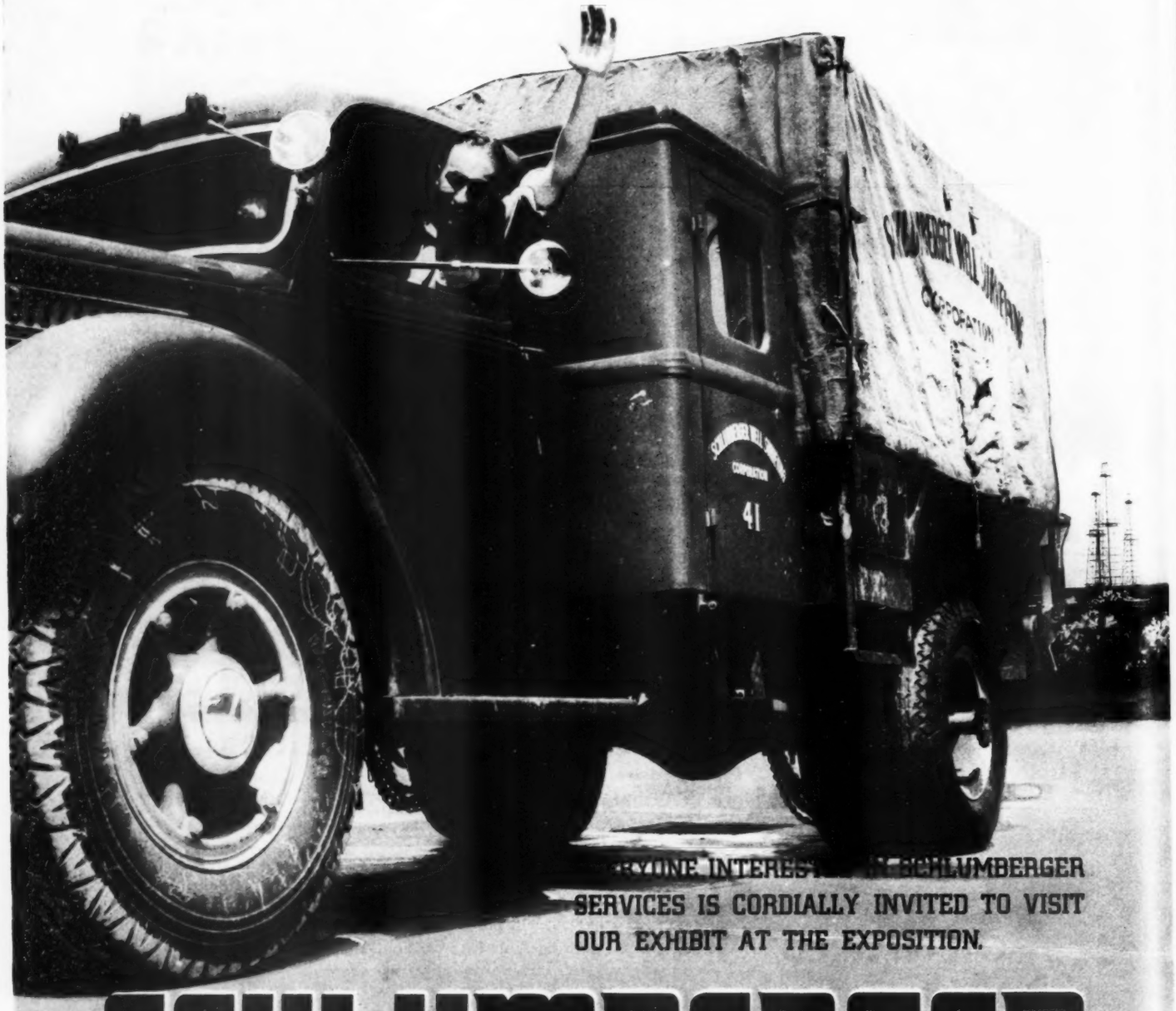
"SEE YOU AT THE OIL SHOW"



ANYONE INTERESTED IN SCHLUMBERGER SERVICES IS CORDIALLY INVITED TO VISIT OUR EXHIBIT AT THE EXPOSITION.

SCHLUMBERGER

WELL SURVEYING CORP.

THE STAR OF THE HOUSTON OIL SHOW

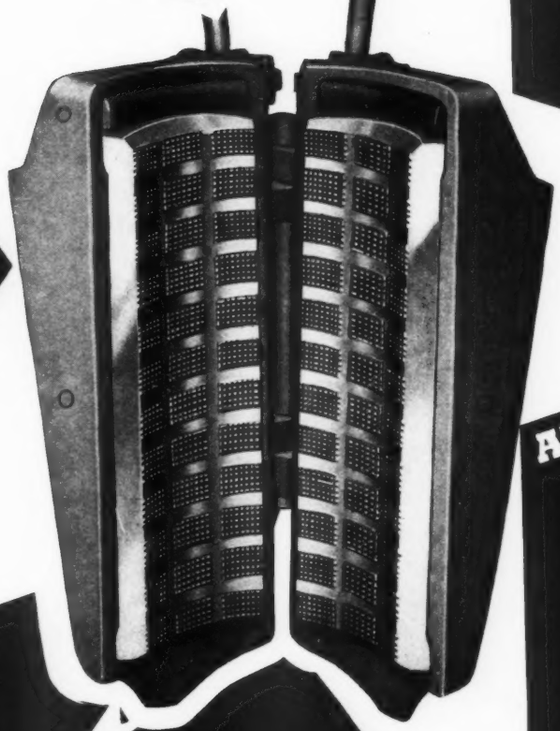
OCTOBER 11-16, 1937

BAASH-ROSS

TOOL COMPANY

SLIP SLIGNING

Rotary Slips



SEE THEM
IN BOOTHS
120 and 221
(Norvell-Wilder Section)

AUTOMATICALLY

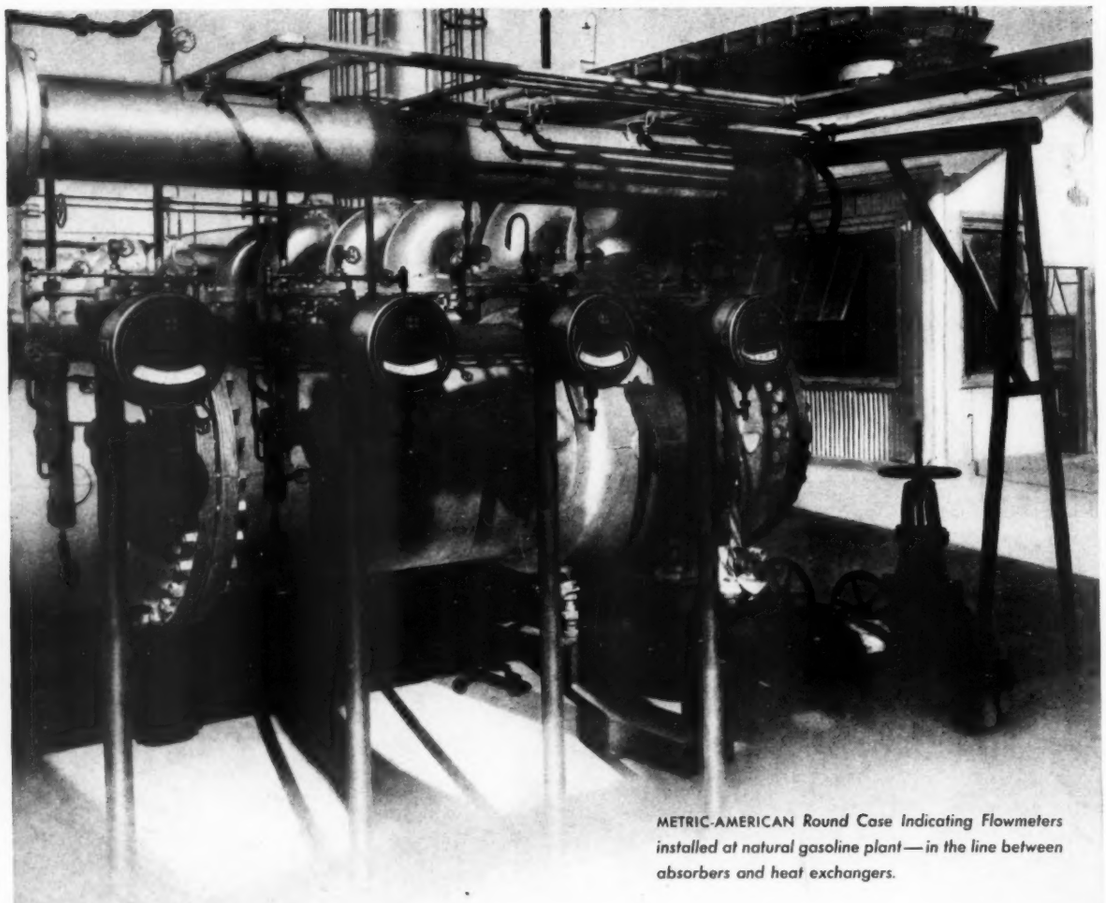
- Maintain a set length non-crushing grip on the pipe.
- Compensate for wear of master bush
- Adjust themselves to pipe in any posi-

BAASH-ROSS

TOOL COMPANY

SAFE, MODERN OIL TOOLS

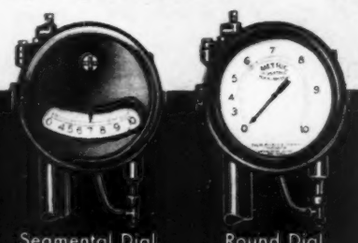
ON DISPLAY IN BOOTHS 120, 221, 1037, 1038



METRIC-AMERICAN *Round Case Indicating Flowmeters installed at natural gasoline plant — in the line between absorbers and heat exchangers.*

The flowmeter goes modern...

Advanced design . . . greater simplicity . . . maintained fine accuracy . . . • A thoroughly modernized instrument which has promptly become a favorite in the industry! Every part is accessible for cleaning and adjustment. Float lever can be adjusted without disturbing the other working parts. By simply removing top, a low pressure test can be run and float action observed. • The Round Case Flowmeter consists of a modified U-gage with mercury seal, and a sturdy, attractively-designed case to enclose indicator and dial. A steel float, actuated by the rise of the mercury, is attached by lever to a horizontal bearing shaft which extends through an adjustable lapped stainless steel stuffing-box into the case. The differential gage is constructed of forged steel throughout. • Complete data furnished on the applications and operation of METRIC-AMERICAN Indicating Flowmeters. Or Recording and Integrating Flowmeters. 867



ESTABLISHED 1870

AMERICAN METER COMPANY

INCORPORATED

Measurement and control of Gas, Oil, Steam, Air and Liquids

METRIC METAL WORKS *ERIE, PENNSYLVANIA*

See the full line of American Meter Company instruments at the Houston **OIL-WORLD EXPOSITION,** *Oct. 11-16. The exhibit will be in charge of the Westcott & Greis division of American Meter Company.*

Star Performers *in the* Seismic Field

INDEPENDENT EXPLORATION

POINTING THE WAY
IXC
COMPANY
FOR THE DRILL

ESPERSON BLDG. HOUSTON, TEXAS

Among new Dowell developments is the compound treatment bringing the production boosting benefits of *Inhibited* Acidizing to tight and impure formations. Once again Dowell demonstrates its ability to meet unusual conditions by devising special methods and technique.

Among the interesting methods of American oil production were the efforts of Roy L. Jones and E. M. Carter, of Wichita Falls to mine oil at Electra, Texas in 1925. Sinking a shaft 108 feet to the top of the sand body, a drift was driven some 15 feet. The shaft was then deepened another 20 feet and a second drift of 60 feet run under the pay. Daily production averaged 60 barrels. Unprofitable in comparison with present low cost drilling, this experiment proved the possibility of mining as a secondary recovery method in shallow pays.

DOWELL*

*Registered U. S. Patent Office

DOWELL INCORPORATED · *Subsidiary of* THE DOW CHEMICAL COMPANY · *Executive Office:* MIDLAND, MICHIGAN · *General Office:* KENNEDY BUILDING, TULSA, OKLAHOMA

IN MEXICO . . . DOWELL SOCIEDAD ANONIMA, Apartado 2424, Mexico, D. F., Mexico · Tampico, Tamaulipas, Mexico

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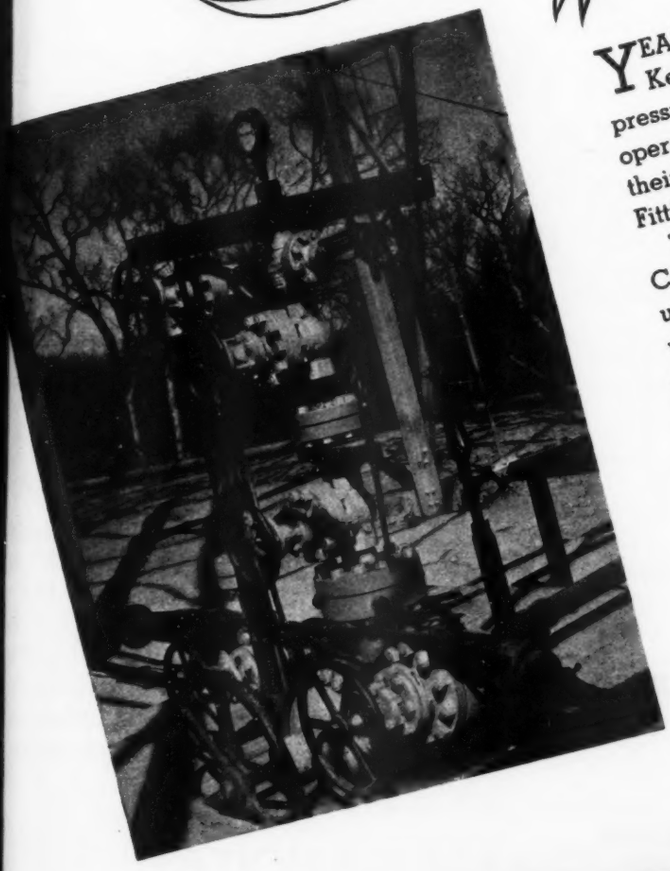
OIL AND GAS WELL CHEMICAL SERVICE

KEROTEST

Enjoys the Confidence of Drillers throughout the Petroleum World!



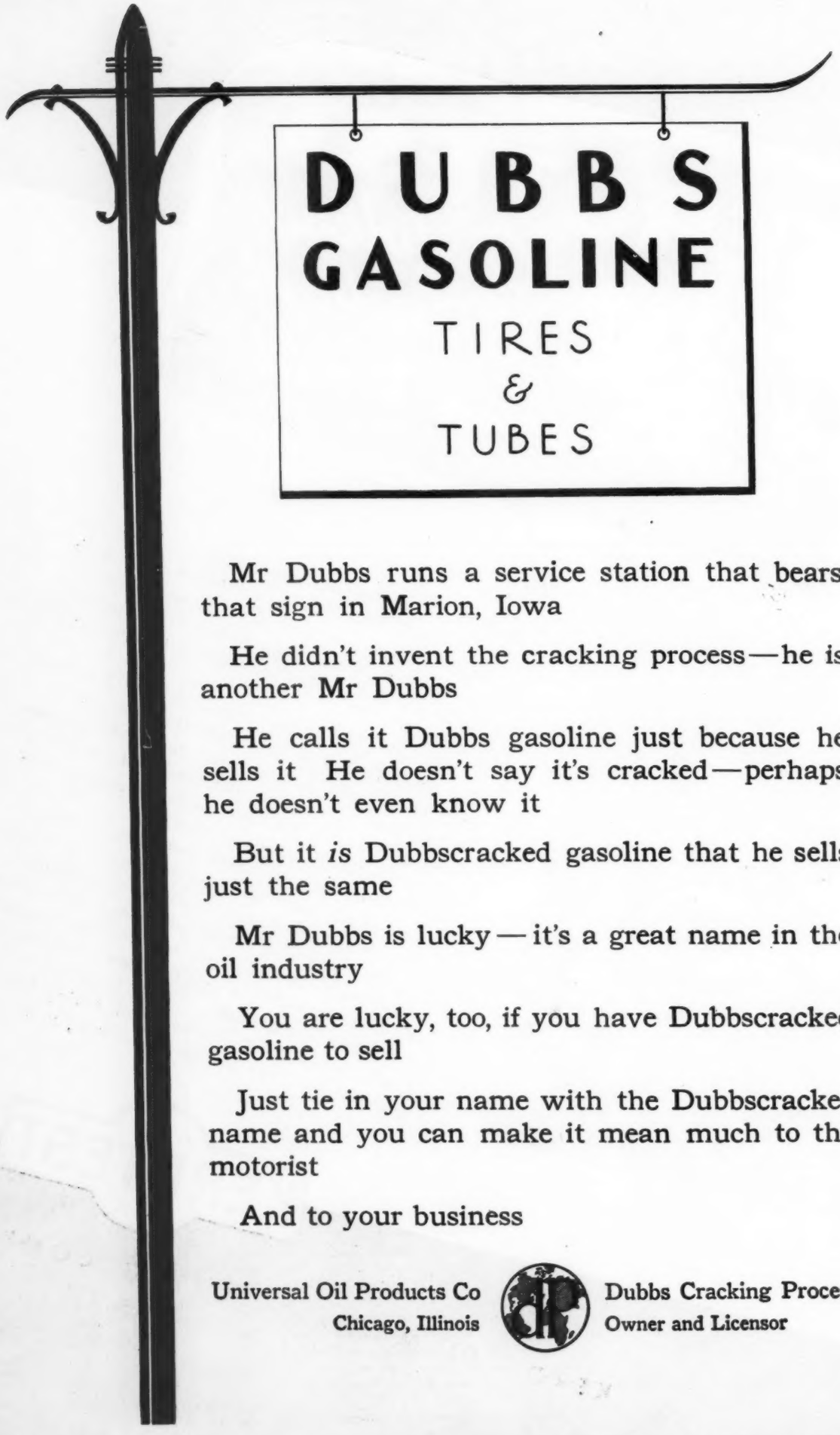
YEARS of successful experience have proved Kerotest Drilling Valves *master* of every high pressure field requirement. That is why so many operators have found it profitable to standardize their entire well control with Kerotest Valves and Fittings.

The steel used in the manufacture of Kerotest Cast Steel Fittings is identically the same as that used in the manufacture of Kerotest 6000 lb. test valves, that is, genuine Manganese Molybdenum Steel, with exactly the same degree of resistance to shock, vibration fatigue and wear.

Moreover, Kerotest Xmas Tree Fittings are machined on the same precision equipment on which the valve bodies are machined. As a result of this accurate method of machining, the Fittings when assembled in the Xmas Tree, are concentric and the axis of the bores in the case of Crosses and Tees are in the same straight line.

Why not make YOUR next well setting 100 per cent Kerotest, too? It's the logical thing to do.

KEROTEST



Mr Dubbs runs a service station that bears that sign in Marion, Iowa

He didn't invent the cracking process—he is another Mr Dubbs

He calls it Dubbs gasoline just because he sells it He doesn't say it's cracked—perhaps he doesn't even know it

But it *is* Dubbscracked gasoline that he sells just the same

Mr Dubbs is lucky—it's a great name in the oil industry

You are lucky, too, if you have Dubbscracked gasoline to sell

Just tie in your name with the Dubbscracked name and you can make it mean much to the motorist

And to your business

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

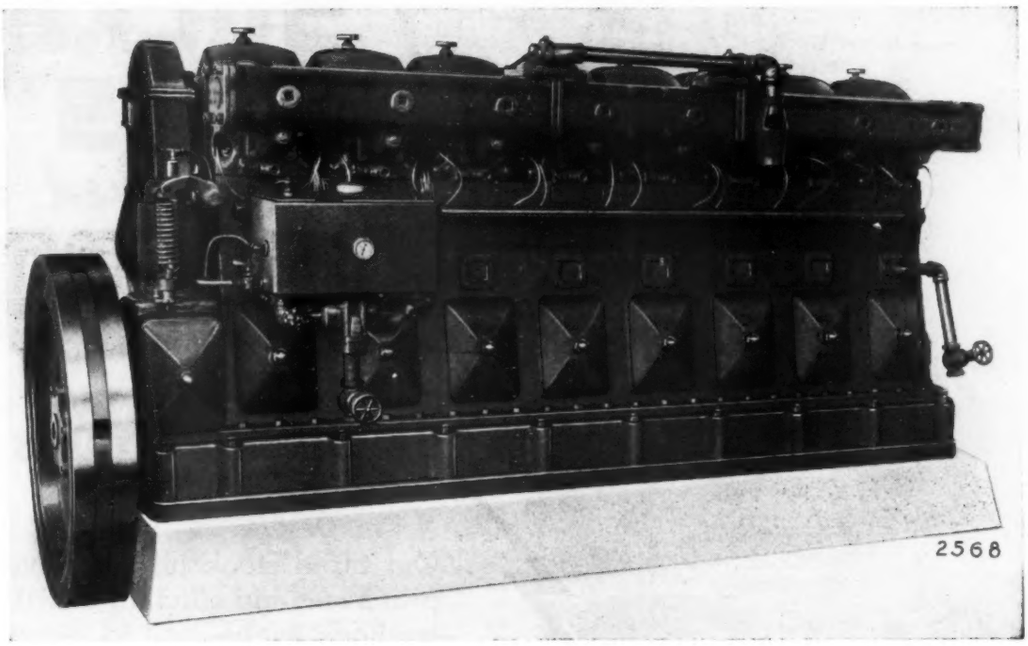
SMOOTH POWER

WITH

REASONABLE SPEED

TRANSIT

VERTICAL GAS ENGINES



TRANSIT Vertical 6x9″ Gas Engines operate without the destructive wear and tear inherent to the "High Speed" type of engine. They just nicely fill the gap between the large slow speed engines and the small high speed engines. Their multiple cylinders produce an even flow of power—free from jars, jerks and shocks to the driven equipment. This makes for longer life and lower maintenance costs.

Oil field pumping equipment, generators and other driven units not only last longer, but cost less to operate when driven by TRANSIT Vertical Gas Engines.

These gas engines are built with two, three, four, six or eight cylinders, ranging from 20 to 108 H.P. Any type of power take-off can be supplied.

Write for Bulletin 430-A, which describes these engines in detail.

NATIONAL TRANSIT PUMP AND MACHINE CO.

OIL CITY, PENNSYLVANIA

NEW YORK - PHILADELPHIA - CHICAGO - CLEVELAND - PITTSBURGH - LOS ANGELES - HOUSTON - TULSA

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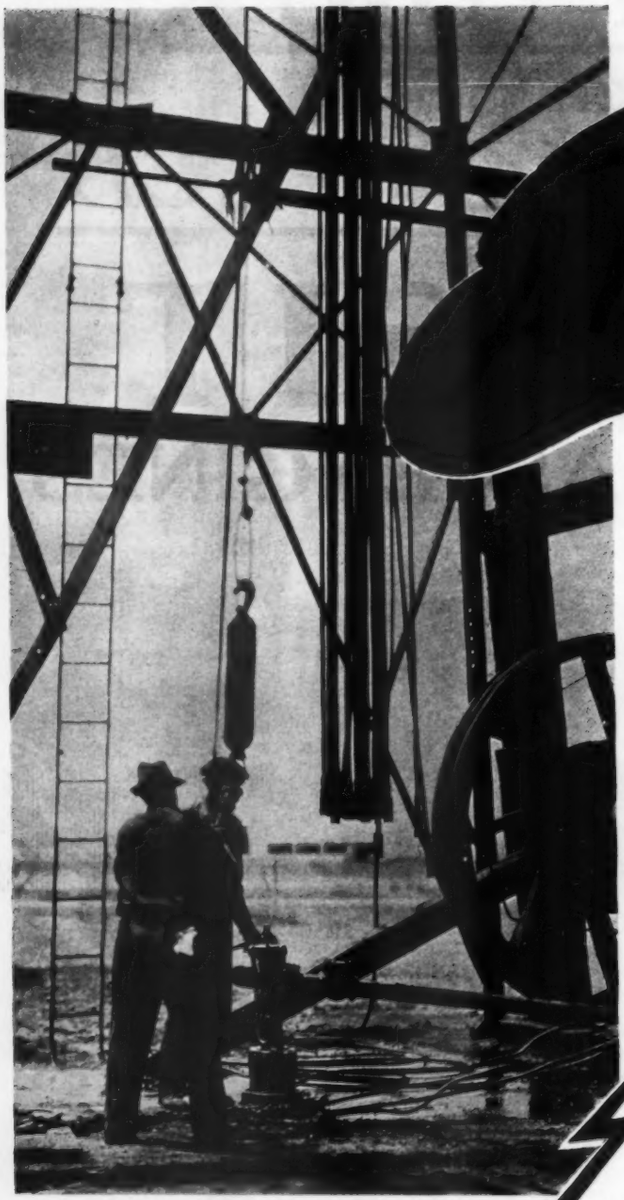
San Francisco, California



# of JONES SUCKER RODS are carried in BRIDGEPORT

MID-CONTINENT & GULF COAST MATERIAL YARDS

Our rapid stock turn-over, volume purchases and efficient distribution methods enable you to secure any quantity of Sucker Rods quickly and conveniently from our stocks; or full carloads direct from our factory connections to any shipping point, anywhere, at prices and terms equal to the most favorable obtainable from any competitive source.

You'll find the type of Jones Rod to fit your individual well conditions at our nearest store.

An easily placed telephone call to the handiest Bridgeport Store or Representative will bring you quickly what you want, when and where you want it.

BRIDGEPORT MACHINE COMPANY
MANUFACTURERS DISTRIBUTORS
OIL DRILLING-FISHING AND PRODUCTION EQUIPMENT
GENERAL OFFICE AND WORKS: WICHITA, KANSAS

Houston - Dallas - San Antonio - Corpus Christi - Odessa - Shreveport
Tulsa - Oklahoma City - Wichita - and Branch Stores

SIMPLIFY
YOUR SERVICE WORK!

On services particularly, connections have to be quickly and simply made, and most of all, reliable. In more ways than any other joints, Dresser *flexible* Style 38 Service Couplings give you these qualities. They simplify your work amazingly, insure uninterrupted performance because:

1. CONNECTIONS ARE PERMANENTLY GAS-TIGHT, especially on high-pressure work, as proved by the thousands of Dresser joints that have been used as standard since 1880. Joints "ride" with the line. Pipe ends have full thickness—there are no threads to corrode through. Coupling can be assembled in only one way—the *permanently tight way*. Under actual test, Dresser Service connections have been deflected over 100,000 times, through a 4° arc, at 100 lbs. per sq. in. pressure, with no sign of leakage. Says one customer: *"To date we have never had a leak on one of your couplings that we know about and we have installed thousands over the past ten years."*

2. STRESSES and pipe leverage at main or in service resulting from expansion, contraction due to frost, soil settlement, traffic shock, vibration, careless backfilling of adjacent water or sewer services, etc., are *absorbed*, preventing the failures that often occur in rigid service joints or in rigid tees, ells, or saddles at main. A Dresser *flexible* connection is especially recommended about 18" from the main. Says one customer: *"Although temperature reached 31°F. below and frost was well below our lines, no breaks occurred. We can attribute this fact to the number of Dresser Couplings used. During the winter some of our neighboring companies suffered severe losses and expensive repairs."*

3. SPEED OF JOINT-MAKING, a very important factor on reconnections or under pressure, is remarkably fast, requiring only two or three minutes. Joints come completely assembled. All you have to do is stab in the *plain-end* pipe and tighten the nuts.

4. SIMPLICITY AND EASE OF ASSEMBLY save all around. Ordinary labor installs. One tool only,—a wrench—is required. There is no rigging up of complicated installation apparatus, no "human equation." Plain-end pipe is used, eliminating threading both in shop or in cramped quarters on job (as near a wall). Wet ditch or bad weather need not halt work. Body of coupling spans variations in space between pipe ends, giving a "come and go" that makes exact pipe lengths unnecessary. Every connection is its own union. You get a good joint on the first attempt every time. Says one customer: *"In my 28 years' experience as service man and foreman with our local gas company, I have never found anything quite so handy for service lines as the Dresser Coupling."*

5. SAFETY from explosive hazards is inherent. There is no flame, no torch. Joints can be made under gas pressure.

6. SLIGHT MISALIGNMENTS of pipe with street tee, etc., (as when pipe is pushed through with a driving jack) are easily absorbed.

7. SALVAGE and demountability of joints permit re-use on other lines.

(Above, Top) 1¼" I. D. Dresser Style 38 Service Coupling, showing 2-bolt construction supplied for sizes from ¾" I.D. to 2" O.D. incl. (2" I.D. has 3 bolts). Middle-ring length is 3½" for ¾" and ½" I.D., 5" for other sizes.

(Above, Right) Longitudinal section through Style 38 Service Coupling, showing how it joins plain-end pipe in a flexible yet permanently gas-tight connection. All parts are standard and accurately manufactured within close limits.

8. LOW COST is made possible through savings on time, elimination of threading and repairs, salvage, long service, etc.

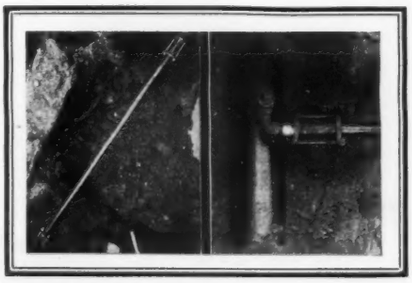
REPAIRS, RENEWALS, ETC.

Another important advantage of Dresser Style 38 Service Couplings is their usefulness on repairs, renewals, etc. Because they are union-type and easily demounted, they are most handy for:

1. *Renewals of defective or corroded services.* The replacement pipe (or valves, tees, and crosses) is quickly cut in, eliminating unions and threading in ditch, and reducing size of excavation to a minimum. (Couplings on either side of valve or fitting also prevent stresses on body.) 2. *Speedy reconnections*—made necessary by (1) some line disturbance as from a pick, grader, or ditch-digger, or (2) after service is cut for ditch-digger—reduce time consumers are without service. 3. *Changing over services* when a new main is laid. 4. *Replacement work* ahead of new permanent pavements. 5. *Closing line* opened to remove rust stoppage. 6. *Connecting stub services* laid ahead of paving. 7. *Connecting services with property owner's line* if either one is installed ahead of the other. 8. *Replacing defective screw joints.* Collar may be cut in two, picked off, and pipe ends tied together with a Dresser. 9. *Reconnections* at curb where cut off for some reason, or where a longscrew or union would be used. 10. *Enclosing small leaks* in barrel of pipe. 11. *Making extensions* to small mains. 12. *Relaying services* in new location.

HOW TO ORDER

Specify: (1) quantity; (2) nominal size and O.D. of pipe; (3) style number; (4) whether couplings are to be black or galvanized; and (5) service—natural gas, manufactured gas, etc.



(Right) When part of a service has to be replaced, the new pipe can be cut into the line quickly and easily with Style 38's, which act as unions and eliminate threading.

(Extreme right) A style 38 installed within 18" of main prevents failures in swing joint by absorbing stresses due to movement of either service or main.

FREE SAMPLE

Write for free sample of Style 38. Simply specify size. No obligation. Information and prices on complete line of other Dresser Service Fittings also furnished promptly.

S. R. DRESSER MFG. CO.

BRADFORD, PA.

In Canada: Dresser Mfg. Company, Ltd., 60 Front St., W., Toronto, Ontario

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LUNKENHEIMER
350 lb. SP VALVES

for Oil Well Drilling Operations and High Pressure Gas, Oil and Hydraulic Service

BRONZE VALVES

350 lb. SP- 550° F.
1000 lb. GLP-150° F.

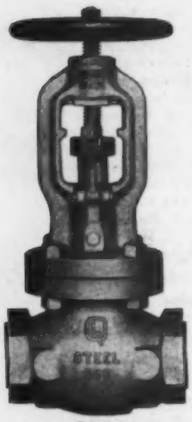
Fig. 1878 Globe
Renewable "NT4" Nickel Alloy Seat and Disc
Union Bonnet

Fig. 1879 Lift Check
Renewable Bronze Disc
Integral Seat

Fig. 1880 Swing Check
Renewable Bronze Disc and Side Plugs

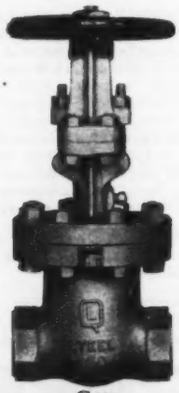
Fig. 1881 Gate
Renewable "NT4" Nickel Alloy Seats and Disc

STEEL VALVES 350 lb. SP-580° F.

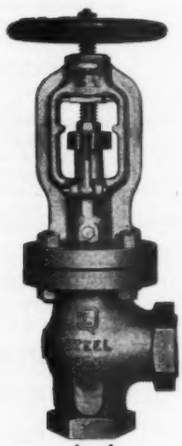


Globe
Fig. 1872 Screw Ends
*Fig. 1600 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Ring

Swing Check
Fig. 1490 Screw Ends
*Fig. 1491 Flange Ends
Renewable Stainless Steel Disc
Nickel Alloy Seat Ring



Gate
Fig. 1869 Screw Ends
*Fig. 1498 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Rings



Angle
Fig. 1873 Screw Ends
*Fig. 1601 Flange Ends
Renewable Stainless Steel Stem and Disc
Nickel Alloy Seat Ring

*(Basic Rating 300 lb. SP-750° F.)

Lunkenheimer Distributors in all oil field centers are prepared to give prompt delivery on 350 lb. SP valves from stock.

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"QUALITY"
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For detailed information on these new valves ask your distributor for Circular No. 598 or write for a copy direct.

SEE THESE VALVES AT THE OIL SHOW—LUNKENHEIMER BOOTH NOS. 208-210

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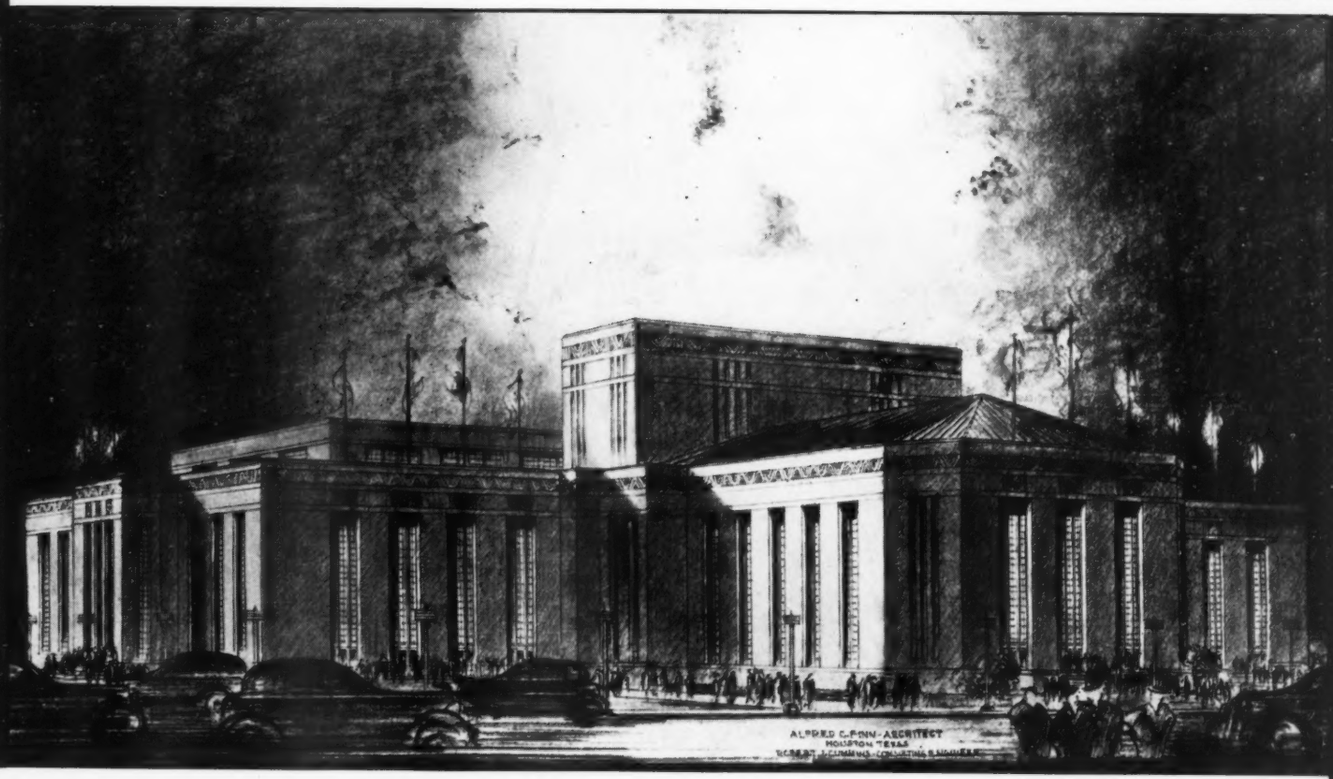
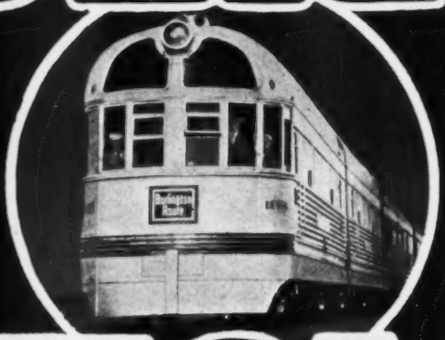


OCTOBER 11-16, 1937

HOUSTON, TEXAS

MODERNIZE



ECONOMIZE

WITH

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LEFT—EM-2-800 Electrical Mechanical Rotary Rig with 2-200 H. P. Cummins Full Diesel Engines.

RIGHT—Two LI-600 Cummins 200 H. P. Full Diesel Engines powering Wilson Giant Rotary Rig in Oklahoma

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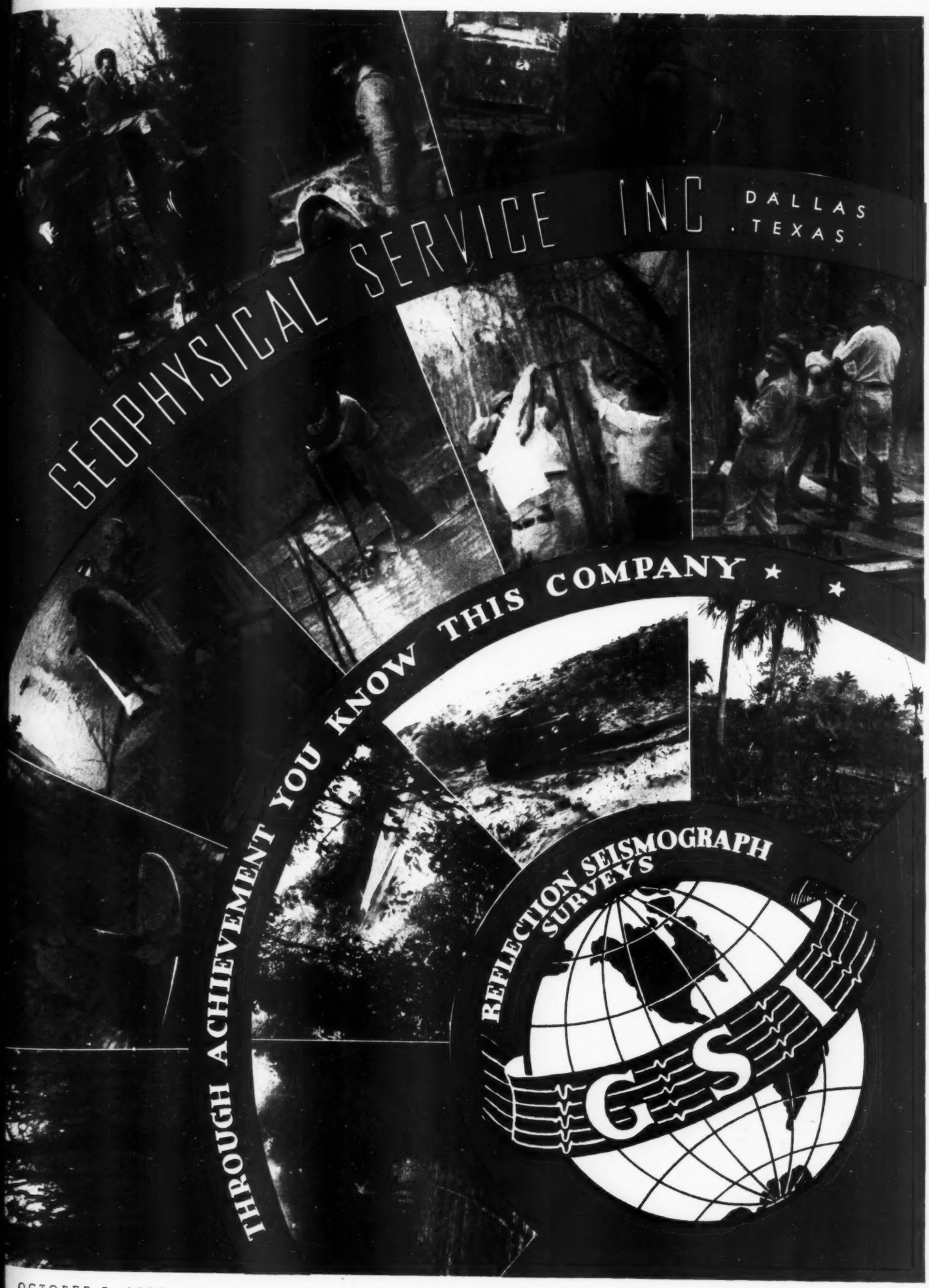
GEOPHYSICAL SERVICE INC
DALLAS
TEXAS
THROUGH ACHIEVEMENT YOU KNOW THIS COMPANY
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See at the OIL-WORLD EXPOSITION

HOUSTON, OCT. 11-16 '37

T·I·W

OIL FIELD PRODUCTS

T·I·W BOOTHS

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. . . the most complete line of practical, safe, and trouble-saving oil field products manufactured by one organization.

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You buy T-I-W products with confidence . . . for back of them is nearly a quarter-of-a-century of experience serving the leading operators in the world's greatest oil fields.

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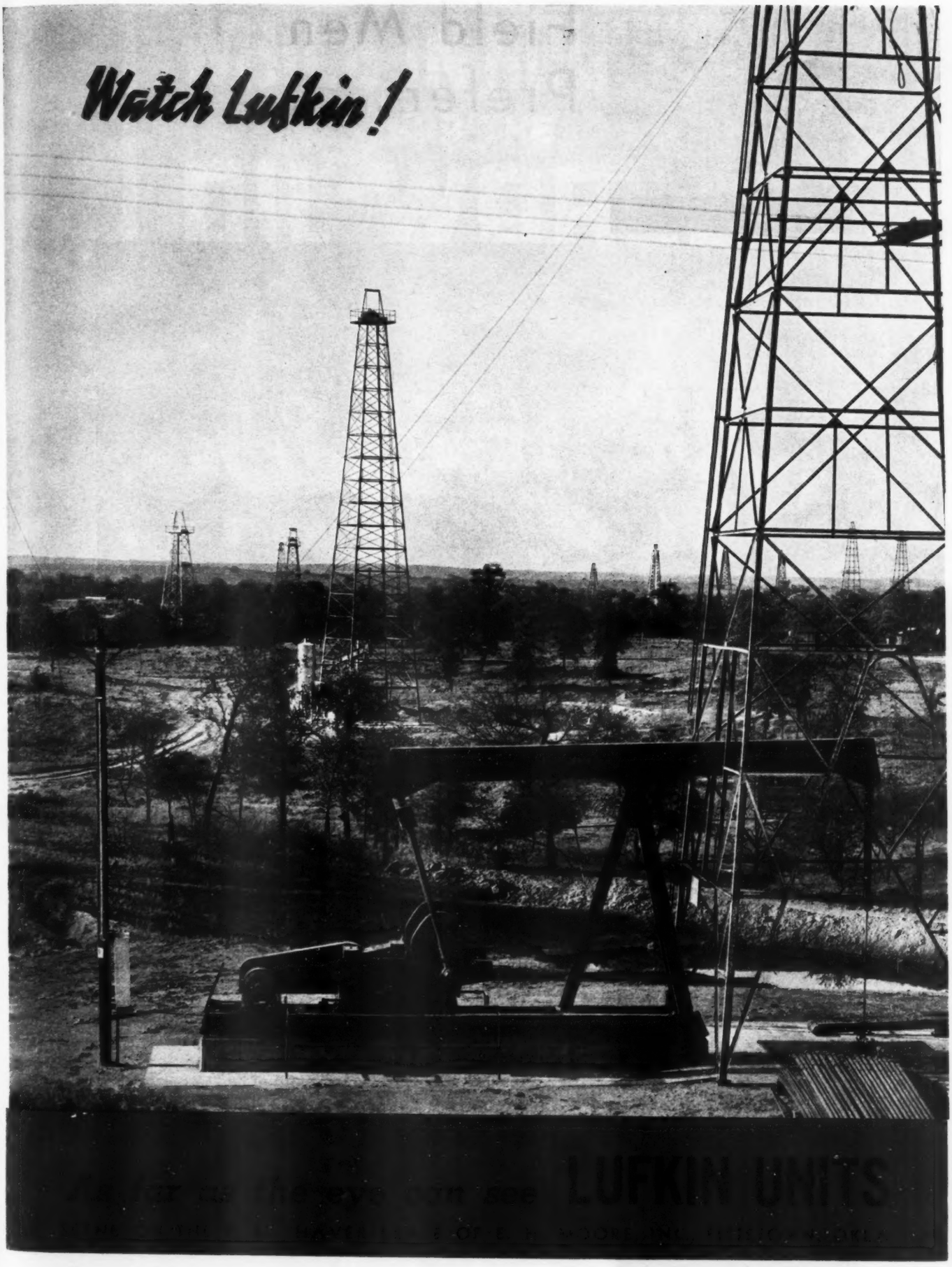
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LUFKIN UNITS

Field Men Prefer....

Brake Lining

The men on the derrick floor like RAYBESTOS Brake Lining.

It responds quickly and smoothly to light pressure on the lever. Great loads seem to make little difference. It never smokes. It never burns. It makes drilling safer.

And it wears more slowly. The records show that less money goes for brake lining when RAYBESTOS is used.

In short, it's one of those "Quality Products" the industry expects at FRICK-REID Stores.

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Equipment Suppliers Exclusively

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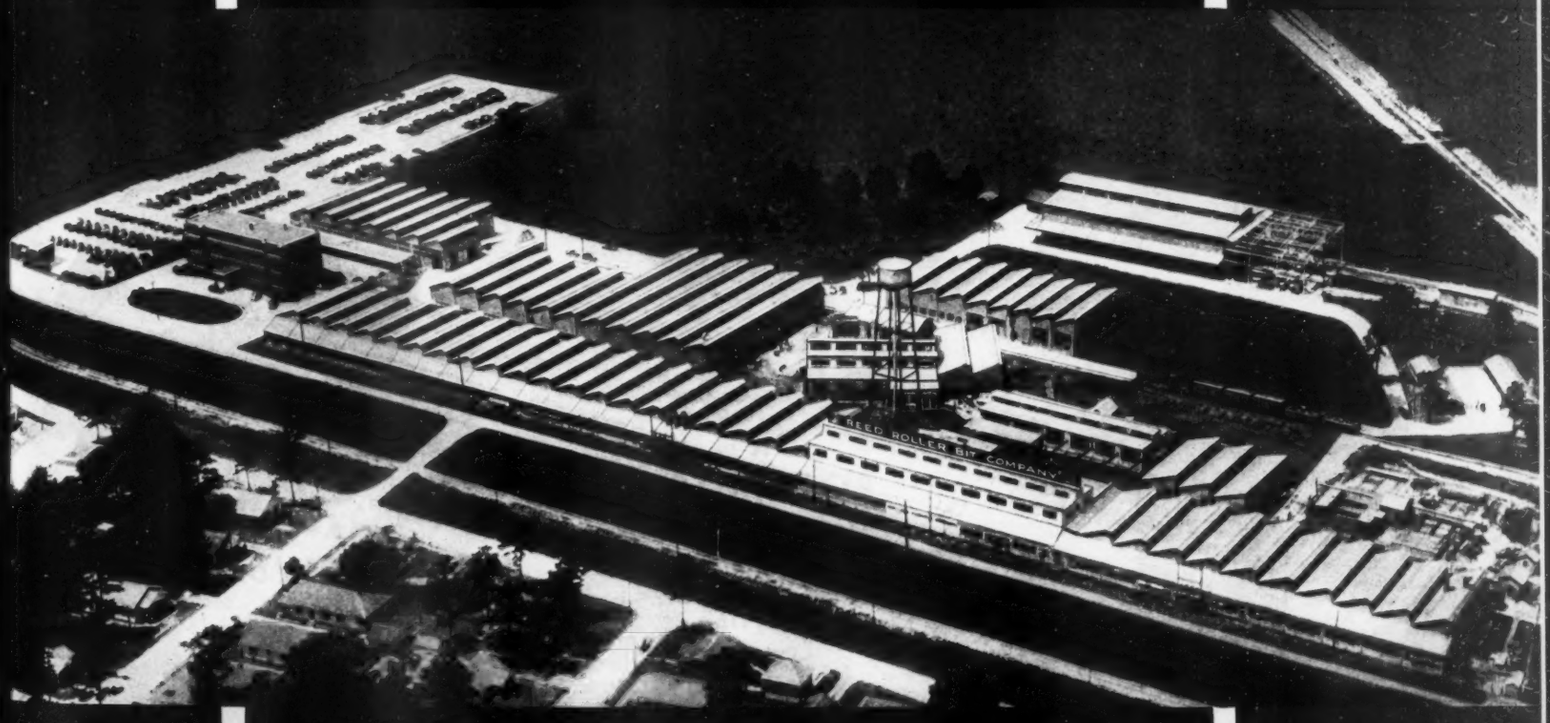
OIL-WORLD
Exposition
VISIT *the* REED PLANT

MACK STREET, OFF NAVIGATION BLVD.



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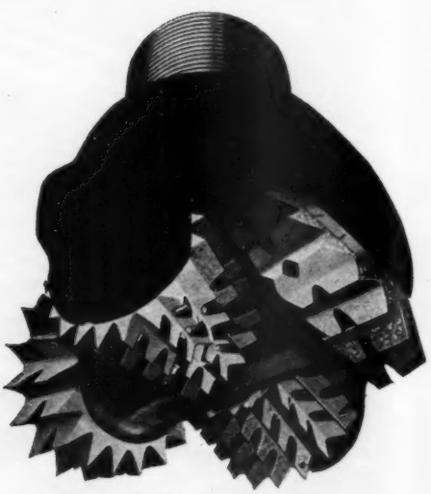

REED DK-2

REED DK-3

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FOR SPEED . . . ECONOMY . . . DURABILITY

REED
KOR-KING
CORE DRILLS
for
greater certainty and
increased percentage
recovery of
LARGER DIAMETER
CORES

REED
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FISH TAIL BITS

REED
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HOLE-OPENING
BIT

REED
"B-R"
DRILLING BIT
with
WIRE LINE
Retractable
CORE BARREL

Cores taken at 10,000 feet or greater in one hour without removing drill pipe.

REED
"B-R"
HARD FORMATION
HEAD

REED
"B-R" SOFT FORMATION
HEAD
WITH CORE BARREL IN POSITION

Two Blade, Box Type Three Blade, Box Type Four Blade, Box Type

REED WELDED-IN BLADE DRILLING BITS

THE OIL-WORLD EXPOSITION, HOUSTON, OCT. 11-16-'37

SEE RECORD-MAKING REED TOOLS

at the OIL-WORLD EXPOSITION

HOUSTON, OCTOBER 11-16-'37

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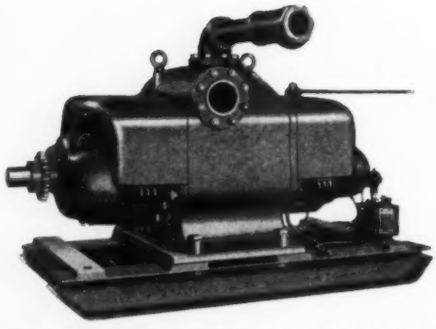
REED
REAMERS

REED ROTARY DRILLING TOOLS
SPEED • ECONOMY • DURABILITY



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Type No. 101

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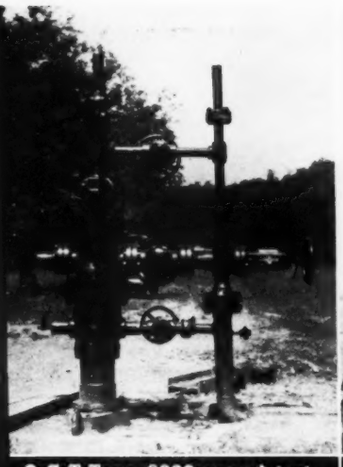
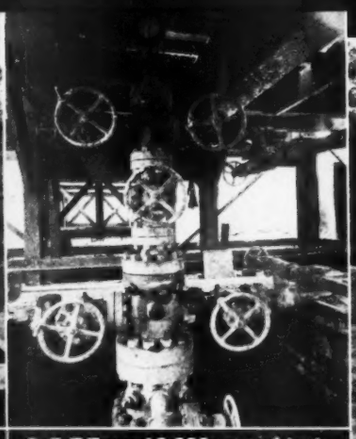


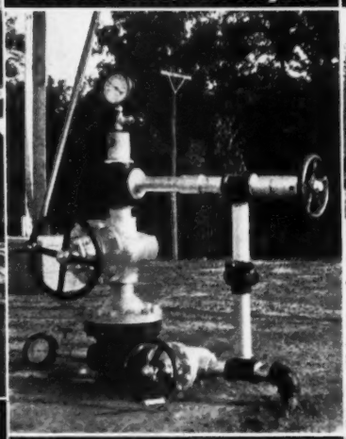
O-C-T Tree, 6000-pound test, Elk-Poca Field, West Virginia

O-C-T Tree, 6000-pound test, Shuler Field, Arkansas

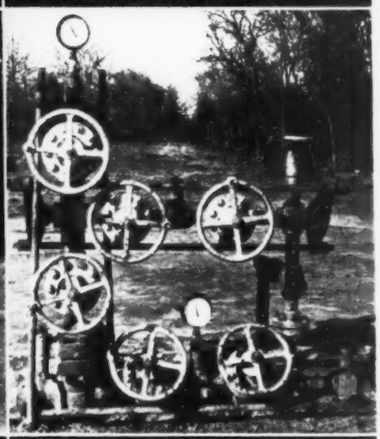
O-C-T Tree, 6000-pound test, Rodessa Field, Louisiana



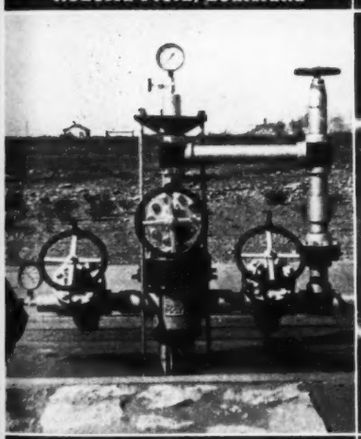
O-C-T Tree, 10,000-pound test, Cotton Valley Field, Louisiana



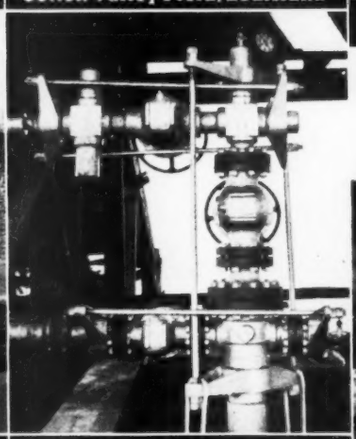
O-C-T Tree, 3000-pound test, Lisbon Field, Louisiana



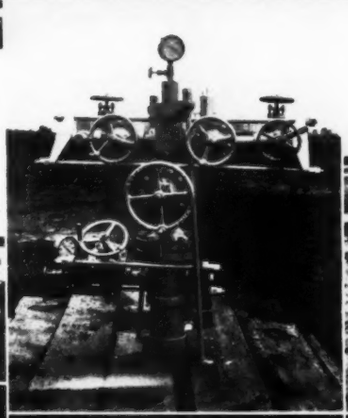
O-C-T Tree, 6000-pound test, Red Lake Field, Texas



O-C-T Tree, 3000-pound test, Ector County, West Texas

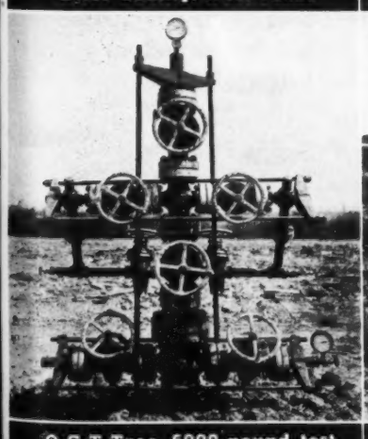


O-C-T Tree, 5000-pound test, Jal, New Mexico, Field



O-C-T Tree, 5000-pound test, Hastings Field, Texas

O-C-T Tree, 4000-pound test, Benavides Field, Texas



O-C-T Tree, 6000-pound test, Placedo Field, Texas

O-C-T Tree, 5000-pound test, Clarkwood Field, Texas

Shown on this page are a few of the many types of O-C-T assembled and tested Christmas trees. There's a type for every well condition. Blueprints and prices on any type O-C-T Christmas tree will be furnished on request.

Call your nearest O-C-T representative for information pertaining to O-C-T equipment.

BUY THROUGH YOUR SUPPLY STORE

OIL CENTER TOOL CO.

QUALITY O-C-T PRODUCTS

HOUSTON, TEXAS, U.S.A.

CABLE ADDRESS "OCENTOL"

WE FURNISH ALL 3

Electric Rig above—Mechanical Rig below

THE *All-Electric Rig* . . . the *Electrical-Mechanical Rig* . . . or the *Texrope Driven Mechanical Rig* . . . each has its adherents, each works best in some fields. You must have the right rig for your field. Allis-Chalmers, the pioneer in d-c electric drilling, is the only company building all three and can give you an unbiased recommendation as to the proper rig.

An Allis-Chalmers rig drilled the deepest hole in Oklahoma, over 11,000 feet. Others have been sold to drill the deepest holes yet contemplated in the Gulf Coast area.

See your supply company and specify Allis-Chalmers.

EQUIPMENT ENGINEERS TO INDUSTRY

ALLIS-CHALMERS

A-C

MILWAUKEE WISCONSIN

829

be a reason!

HAPPY services to the Petroleum Industry include the facilities of the Boston Woven Hose & Rubber Company, whose plant is the largest in the world devoted exclusively to Mechanical Rubber Goods and their experience of over sixty years include many contributions so outstanding that they fill many pages in the scientific history of the Rubber Industry.

Seventeen years of leadership in serving the Petroleum Industry has established HAPPY as the Belting Headquarters for the Mid-Continent with Sales Offices, Branches and Stocks located to adequately serve your requirements.

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WICHITA
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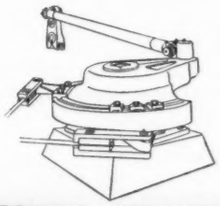
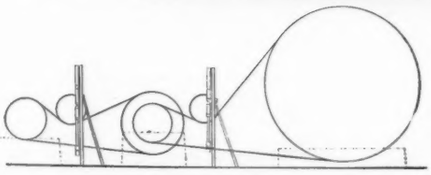
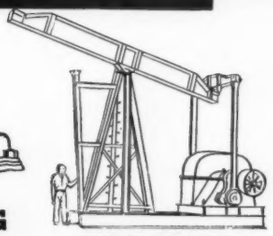


DURNELL UNIVERSAL BACK CRANK PUMPING UNIT

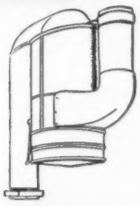


SHORT CENTER DRIVES WITH COUNTER-SHAFTS AND TIGHTENERS

BROWNING PIVOTED MOTOR BASE



PUMPING UNITS



VORTEX AIR CLEANERS

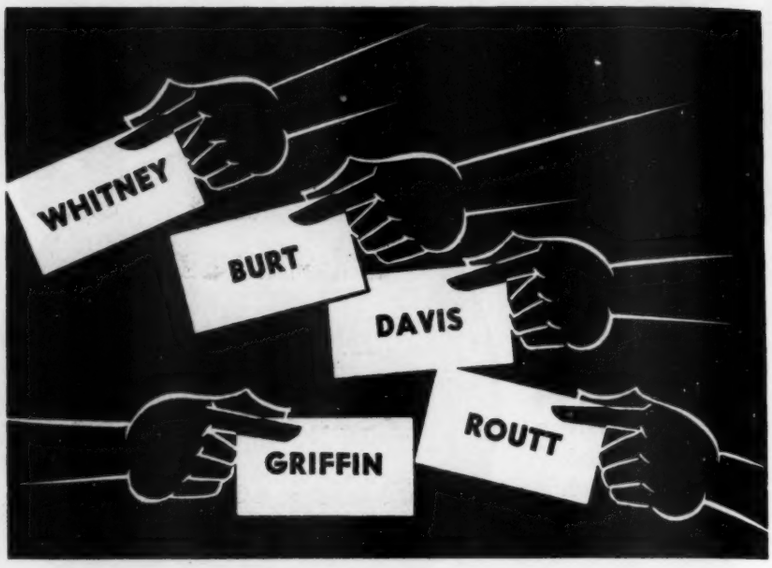
YEARS OF *SERVICE*

BELTING COMPANY

TULSA, OKLAHOMA

Patentees, owners and operators of the exclusive continuous vulcanization process.

WAITING TO GREET YOU AT THE HOUSTON SHOW



Baker Cement Down-Whirler Guide Shoe.

Houston Plant and Office of Baker Oil Tools

Where the Entire Line of Baker Oil Tools will be on Exhibit . . . including the NEW BAKER CEMENT DOWN-WHIRLER GUIDE SHOE

This new Shoe is designed to facilitate the landing of casing where bridges or other formation obstructions are encountered.

As shown in the accompanying illustration, the Baker Cement Down-Whirler Guide Shoe is provided with a number of baffled side ports which are positioned a few degrees off vertical.

Thus, when running in, if the casing encounters a sand bridge, the circulating fluid, as it passes through these baffled ports, is given a downward jetting and whirling action, which cuts away the sides of the bridge, permitting the sand to be readily circulated out of the hole as the bridge disintegrates.

Even where bridges are not encountered, the washing down action of the Baker Cement Down-Whirler Guide Shoe is often an aid in conditioning the well preparatory to cementing.

It is recommended that the Baker Cement Down-Whirler Guide Shoe be used in conjunction with a Baker Cement Float Collar.

This new type Shoe is also available in a floating unit — the Baker Cement Down-Whirler Float Shoe — possessing the three characteristics present in all Baker Floating units: 1. STRENGTH; 2. VALVE EFFICIENCY; 3. DRILLABILITY.

Don't Miss Seeing This New Type of Shoe at the Oil Show

Any Baker representative will be glad to explain in detail its design, construction and operation.
You are also cordially invited to visit our Houston Office and Plant and see for yourself just how Baker Products are made.

BAKER OIL TOOLS, INC.

Telephone JEfferson 8211 – HUNTINGTON PARK, CALIFORNIA – 2959 E. Slauson Ave.
Telephone WAyside 2108 – HOUSTON PLANT AND OFFICE – 6023 Navigation Blvd.
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WEST TEXAS BRANCH OFFICE Odessa, Texas – Telephone 217
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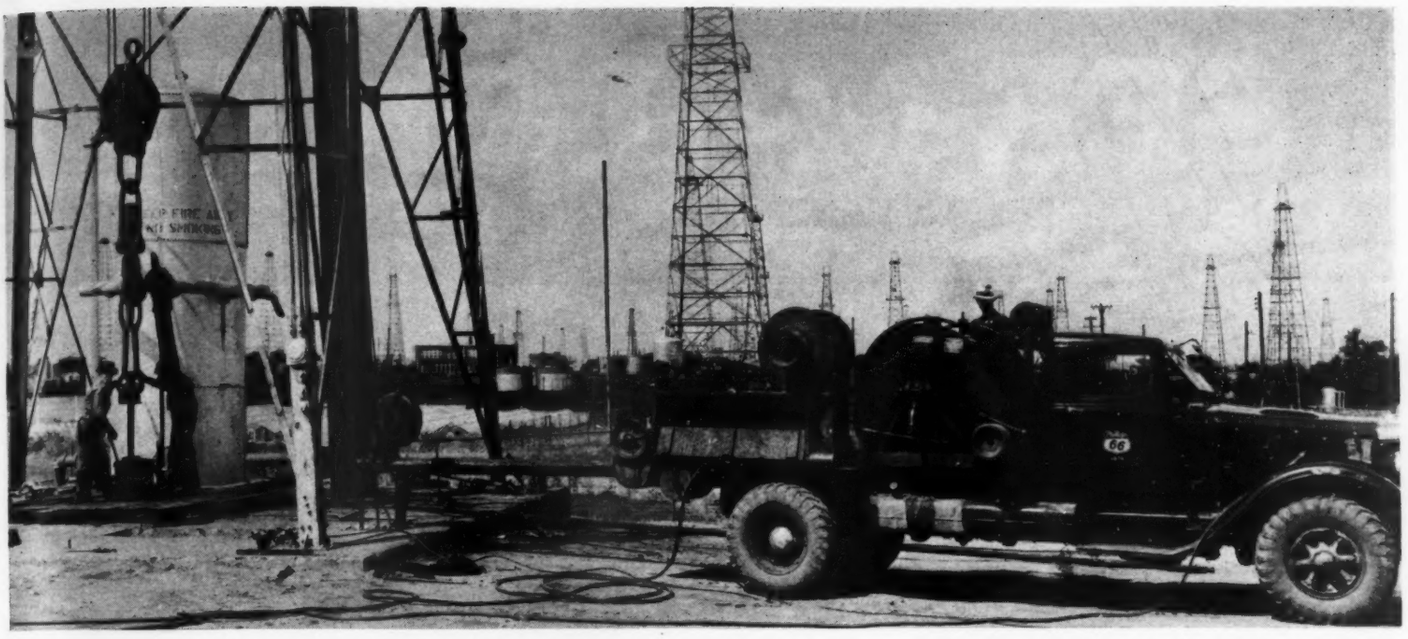
We'll be Seeing You

BAKER OIL TOOLS



The largest producing company in the Oklahoma City field chose Franks winches, because they complete rod and tubing jobs in less time from warehouse to location or from location to location.

FRANKS Winches Acknowledged the FASTEST—MOST EFFICIENT—MOST ECONOMICAL Units in the Oklahoma City Field

In the Oklahoma City field Franks Winches used by the largest producing company in the field in servicing several hundred wells, are generally acknowledged the FASTEST, MOST EFFICIENT, and MOST ECONOMICAL winch units in the area.

Franks units are the fastest for location to location moving. Fastest anchorage. Fastest rig-up. Save shutdown time. Exclusive anchorage facility saves thousands of dollars. Employed by nearly every major oil company in the Mid-Continent and Gulf Coast areas. Over seven hundred winch units built and every one still giving satisfactory service today.

● ● ●

Franks final friction drive truck motor driven well servicing winch units are built in sizes to handle wells from the shallowest to the deepest. They mount upon and take drive from all makes of trucks from 1½ tons to the most powerful.

Write for complete information or see the Composite Catalog.

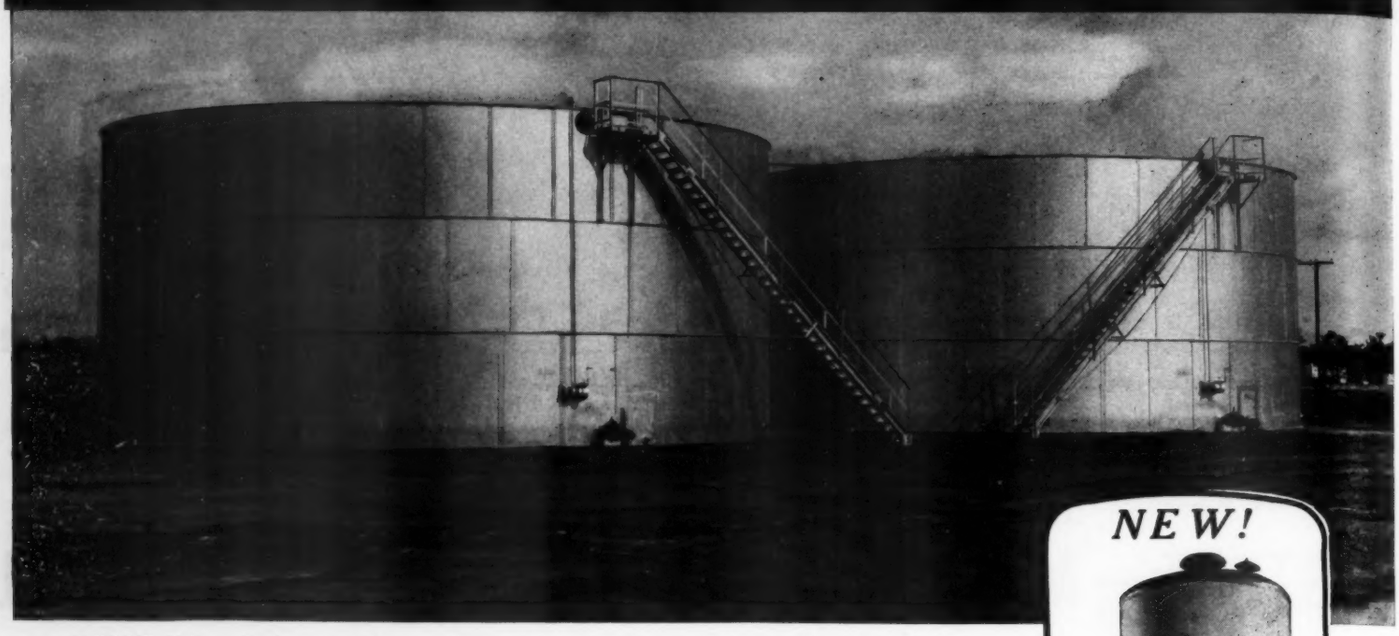
FRANKS SEVEN EXCLUSIVE ADVANTAGES

1. FASTEST ANCHORAGE AND LEAST HOLD-DOWN EXPENSE. Just back Franks truck motor driven winch back into location and anchor at any point on or inside of derrick or mast by means of horizontal telescoping boom. No floor block necessary.
2. FINAL DRIVE FRICTION CLUTCH. Eliminates shock loads and therefore keeps repair to unit at minimum.
3. MOUNTS UPON ANY TRUCK 1½ to 10 TONS. Easily installed at little cost. Power take-off proven success with over 700 units in field, all of which are still operating.
4. FULL TRUCK CAPACITY AVAILABLE. Winch directly behind cab leaving bed for tools or general truck use.
5. LESS WEIGHT AND BETTER DISTRIBUTION ON TRUCK TIRES.
6. LOWER CENTER OF GRAVITY.
7. HANDLES MORE JOBS IN SAME TIME, due to quicker anchorage facility and greater maneuverability.

A battery of Franks Giant Model truck motor driven final friction drive well-servicing winches used by one major company servicing several hundred wells in the Oklahoma City field.

FRANKS MFG. CORP.
WELL SERVICING AND DRILLING UNITS
P. O. Box 137, Whittier Station, Tulsa, Oklahoma
Export Office: 149 Broadway, New York

SEE MALONEY



10,000-Bbl. Maloney Tanks, with Maloney Stairways, Superior Oil Co., of Calif. Evangeline Field, Jennings, La.

Also see our Sectional Steel Stairway and Walkway designed according to new A. P. I. recommendations

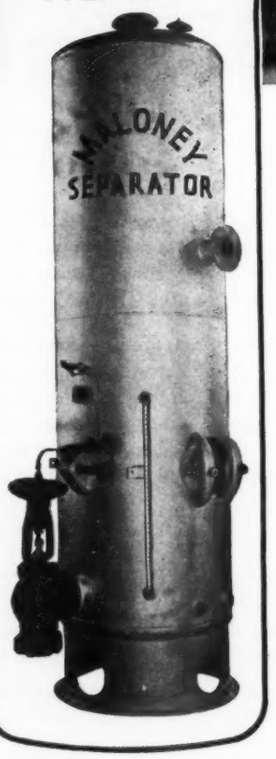
You are cordially invited to see the MALONEY Equipment Exhibit at the Houston Oil Show. You will be interested in the two installations of MALONEY Bolted Steel Tanks. One tank will have our standard coating, which consists of an over-all priming coat of our special Red Chromated Iron Oxide paint, with an outside finish coat of heavy aluminum paint. The other tank will have our extra-heavy Double-Hot-Dip Galvanized Coating.

As a special feature we will show a MALONEY Self-Supporting Sectional Steel Stairway and Walkway—*designed in accordance with the new recommendations of the A.P.I.*

Our exhibit will also feature the new MALONEY Oil and Gas Separator, which is the most recent addition to our line. This improved separator introduces a number of new features. For example, its Mist Traps separate all of the oil from the gas vapors and allow only the dry gas to escape through vent in top of separator. All elements of mist extraction are patented. Another feature is the increased capacity of the initial chamber where oil and gas enter separator. This chamber provides a higher vertical travel for vapors or gases as they enter the new Knock Out Element. The MALONEY Separator is offered in standard sizes and working pressures and is constructed to comply with A.P.I. and A.S.M.E. standards.

Oil-World Exposition, Lot 1012-B.

NEW!



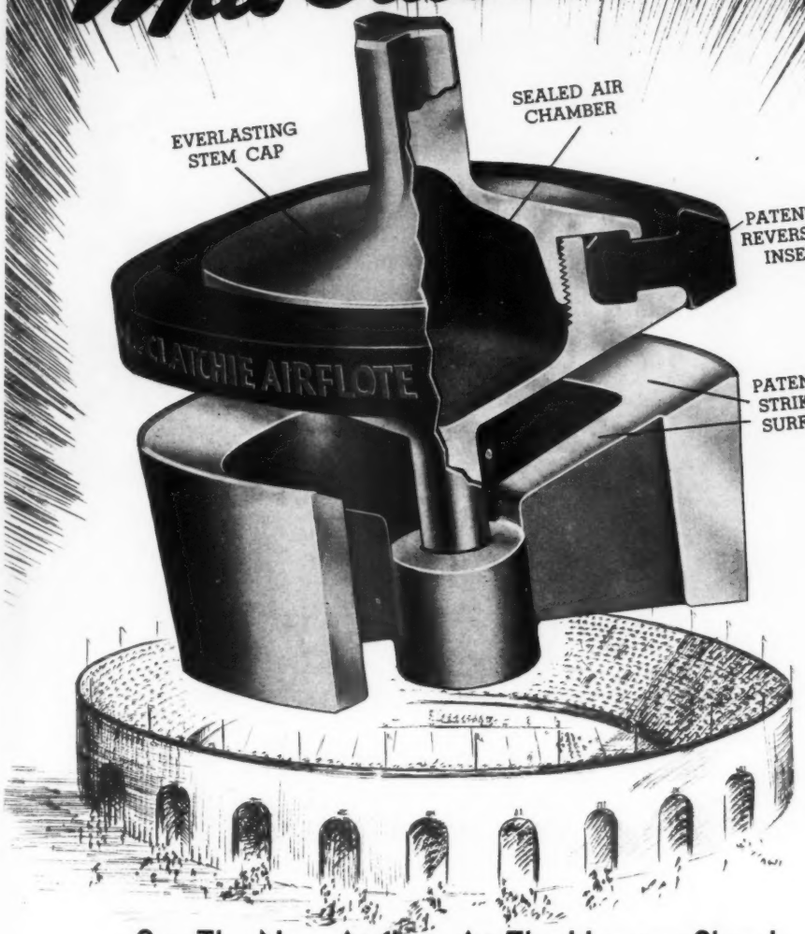
MALONEY TANK MFG. COMPANY

38 N. PEORIA TULSA, OKLA.

MALONEY

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MacClatchie Sells Speed



ANNOUNCING THE NEW

MacCLATCHIE AIRFLOTE VALVE

SEALED AIR CHAMBER GIVES:

- High Buoyancy
- Less Fluid Slippage
- More Efficient Action
- Greatly Reduced Impact

See The New Airflote At The Houston Show!

Eleven years ago MacClatchie engineers revolutionized the pump valve industry with the MacClatchie Streamlined Valve—a valve so advanced in design that it is still the largest selling pump valve in the world!

Now, with drilling going deeper and circulating pressures jumping constantly higher, MacClatchie leads again with a new kind of valve engineered for the heaviest drilling jobs of today and tomorrow—the AIRFLOTE!

THE AIRFLOTE PRINCIPLE

As wells go down, circulating pressures go up, and the pounding impact of valves against seat becomes terrific. To reduce this impact MacClatchie engineers have incorporated in the Airflote a sealed air chamber that makes the valve far lighter without in any way sacrificing strength or rigidity.

As a result, the Airflote is instantly sensitive to changes in the fluid flow, seating faster with far less impact at each reversal of the pump stroke, and cutting fluid slippage to a minimum. You get greater pumping efficiency without pounding, and longer life of both valve and valve seat with the new MacClatchie Airflote!

ADDITIONAL FEATURES

The sealed air chamber is only one of the performance features you get in this new valve. Check these over too!

The Airflote valve seat is the same patented seat used with the famous MacClatchie Streamlined Valve. No need to discard good valve seats when changing to the Airflote, and you get 40% more surface than ordinary valves to efficiently absorb impact and maintain perfect valve alignment.

The air chamber is sealed with a wide diameter tool joint thread that shoulders to give great strength and rigidity. It positively will not leak nor loosen in service but can be readily unscrewed for replacing rubbers.

The valve has unusually long wearing qualities, and a simplified construction using only three parts—valve body, cap, and rubber insert—cuts maintenance costs. The cap, being practically indestructible, can be used over and over again and the rubber insert is reversible for double wear.

The simplified construction alone effects a great saving in valve maintenance costs, and this combined with the greater efficiency and longer life, set an entirely new standard of pump valve value!

See this outstanding new valve at the Oil Show, or write today for complete information.

MacCLATCHIE MANUFACTURING CO.

COMPTON, CALIFORNIA — HOUSTON, TEXAS

EXPORT: GEO. R. WOODS, 17 BATTERY PLACE, NEW YORK CITY

It is particularly appropriate that the Oil World Exposition, major oil show of the year, should be held in Houston, new capital of the oil man's empire. The producer, the refiner, the pipeliner, the marketer will find much to interest them in Houston, much to make their visit a pleasant memory. The First National, which is privileged to serve every department of the oil industry, welcomes the oil fraternity to Houston. Come early, stay late, and see for yourself how Houston is geared to the oil industry's expanding development.

FIRST NATIONAL BANK

IN HOUSTON

MAKE THE FIRST NATIONAL YOUR BANK

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

THE TIME

OCTOBER 11-16, 1937

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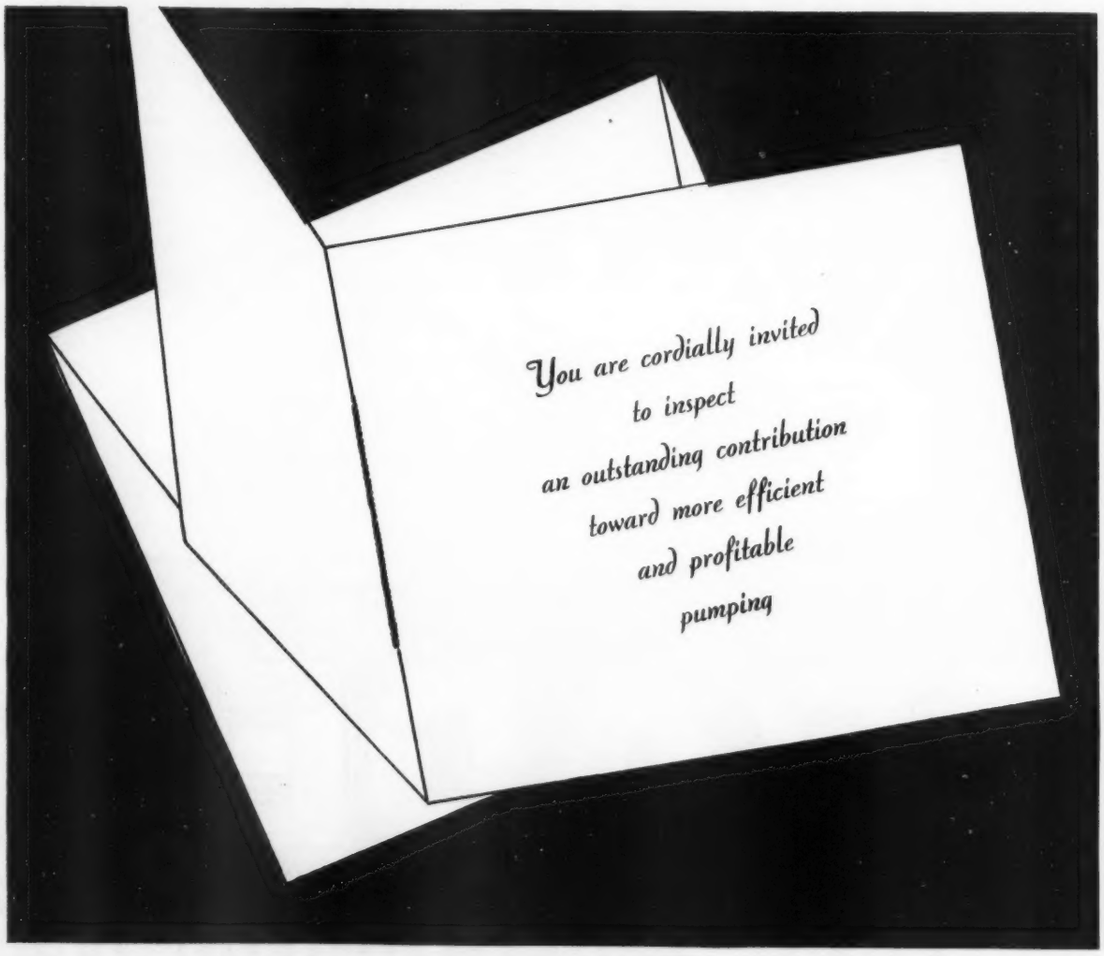
THE PLACE

EXHIBIT OF THE PARKERSBURG RIG & REEL CO.

AT THE HOUSTON OIL-WORLD EXPOSITION

OUTSIDE SPACES—1023—1028—1033



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Utmost in Economy and Utility

SPECIFY "BRADEN"

BRADEN STEEL CORPORATION TULSA OKLA

BRADEN pioneered sectional steel buildings in the Oil Fields, and has devoted 14 years to developing the most economical production methods, along with the most suitable designs, for these buildings.

BRADEN Buildings offer these definite advantages: 1. Complete Standardization; 2. Unequalled Speed of Erection; 3. Complete Suitability to the Purposes for which Designed; 4. Maximum Durability; 5. 100% Portability and Salvage.

Designers—Fabricators—Erectors

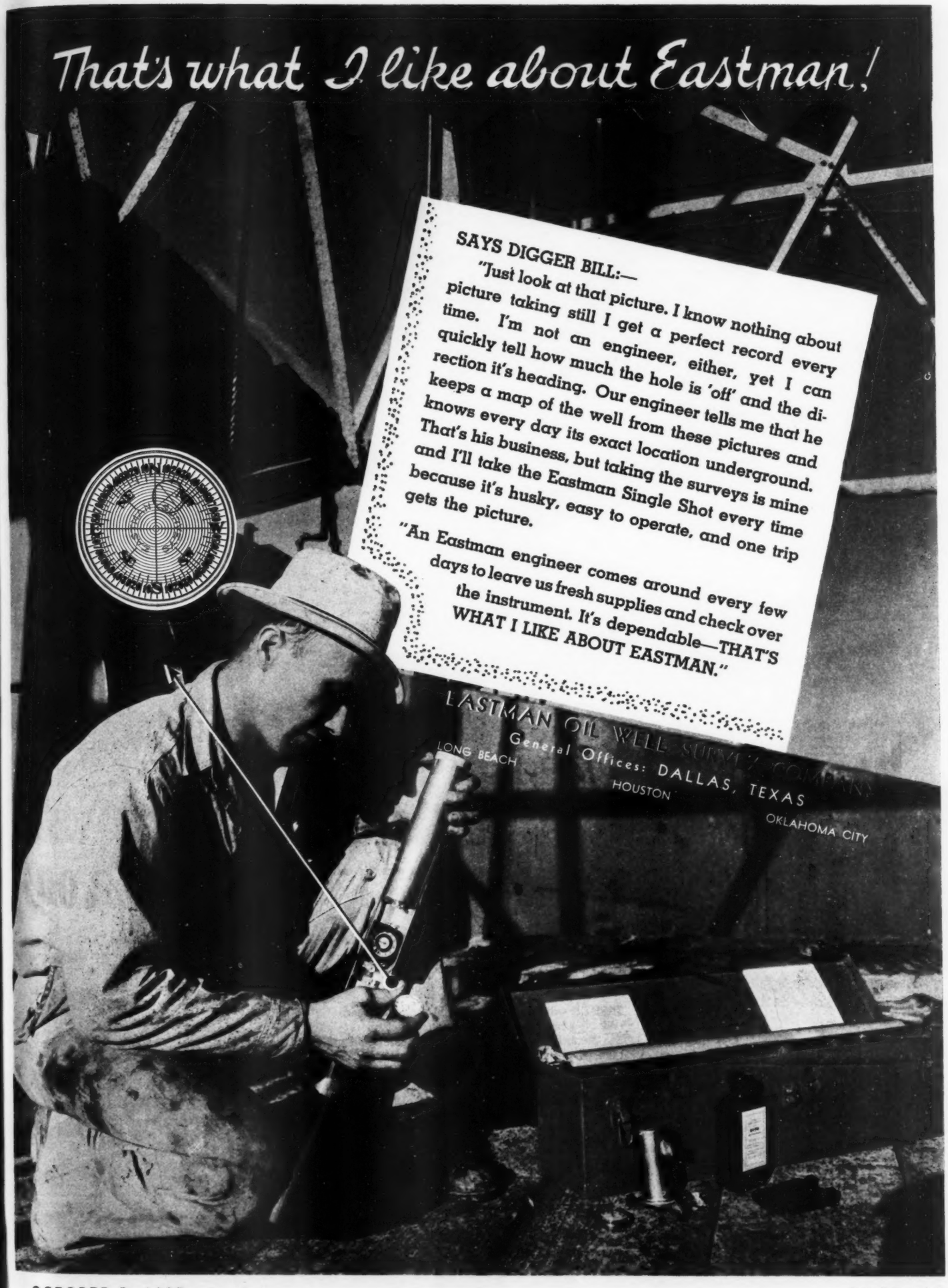
BRADEN STEEL CORP.
1007 E. Admiral Blvd.
Tulsa, Okla.

DETAILS IN 1937 COMPOSITE CATALOG

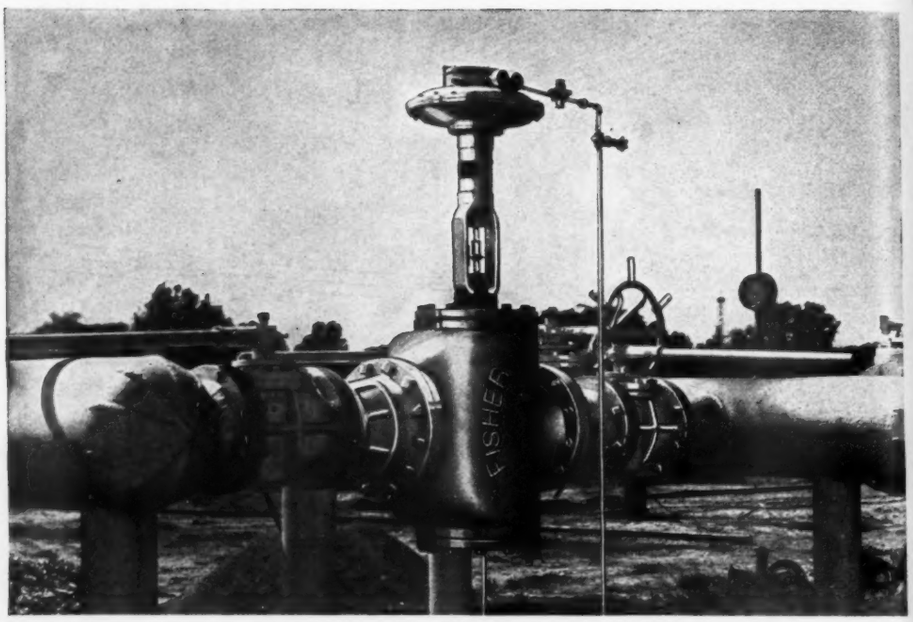
BRADEN

SECTIONAL STEEL BUILDINGS

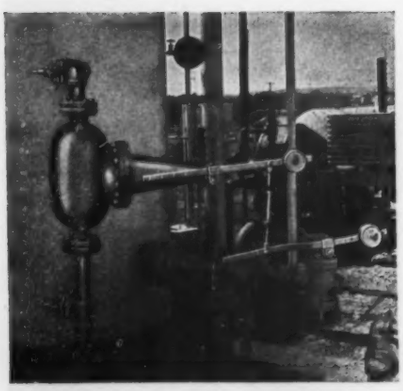
Houston Sales Representative: BRANCE-KRACHY CO., INC.,
4411 Navigation Blvd., Houston, Texas, Telephone: Fairfax 6116


That's what I like about Eastman!
SAYS DIGGER BILL:—
"Just look at that picture. I know nothing about picture taking still I get a perfect record every time. I'm not an engineer, either, yet I can quickly tell how much the hole is 'off' and the direction it's heading. Our engineer tells me that he keeps a map of the well from these pictures and knows every day its exact location underground. That's his business, but taking the surveys is mine and I'll take the Eastman Single Shot every time because it's husky, easy to operate, and one trip gets the picture.
"An Eastman engineer comes around every few days to leave us fresh supplies and check over the instrument. It's dependable—THAT'S WHAT I LIKE ABOUT EASTMAN."
EASTMAN OIL WELL SURVEYING COMPANY
General Offices: DALLAS, TEXAS
LONG BEACH
HOUSTON
OKLAHOMA CITY

BELOW: This photo recently taken in a mid-continent gasoline plant shows a Fisher No. 4255CT Controller with 10" Standard Flanged Globe Body maintaining 30 lbs. back pressure in gas line and passing 23,000,000 cu. ft. per day.



DEPEND ON FISHER FOR POSITIVE CONTROL



In another mid-continent plant this No. 232C Fisher Liquid Level Controller is installed on absorption tower handling mineral seal oil at 130 lbs. pressure. Controller has 1-½" screwed globe body with cast valve and drawn steel float cage.

PROTECT your plant against badly fluctuating pressures and levels — step up production, quality and profit by specifying FISHER Automatic Controllers.

FISHER will engineer and build the correct size and type controllers to meet your exact operating conditions. Fisher Sales Engineers gladly take the responsibility of determining the exact requirements of your service. From their detailed specifications, your controllers are built.

Prompt deliveries are assured by Fisher's special manufacturing facilities and ingenious methods.

Every Fisher Automatic Controller you buy is guaranteed to have been tested under the actual pressure and operating conditions of your service.

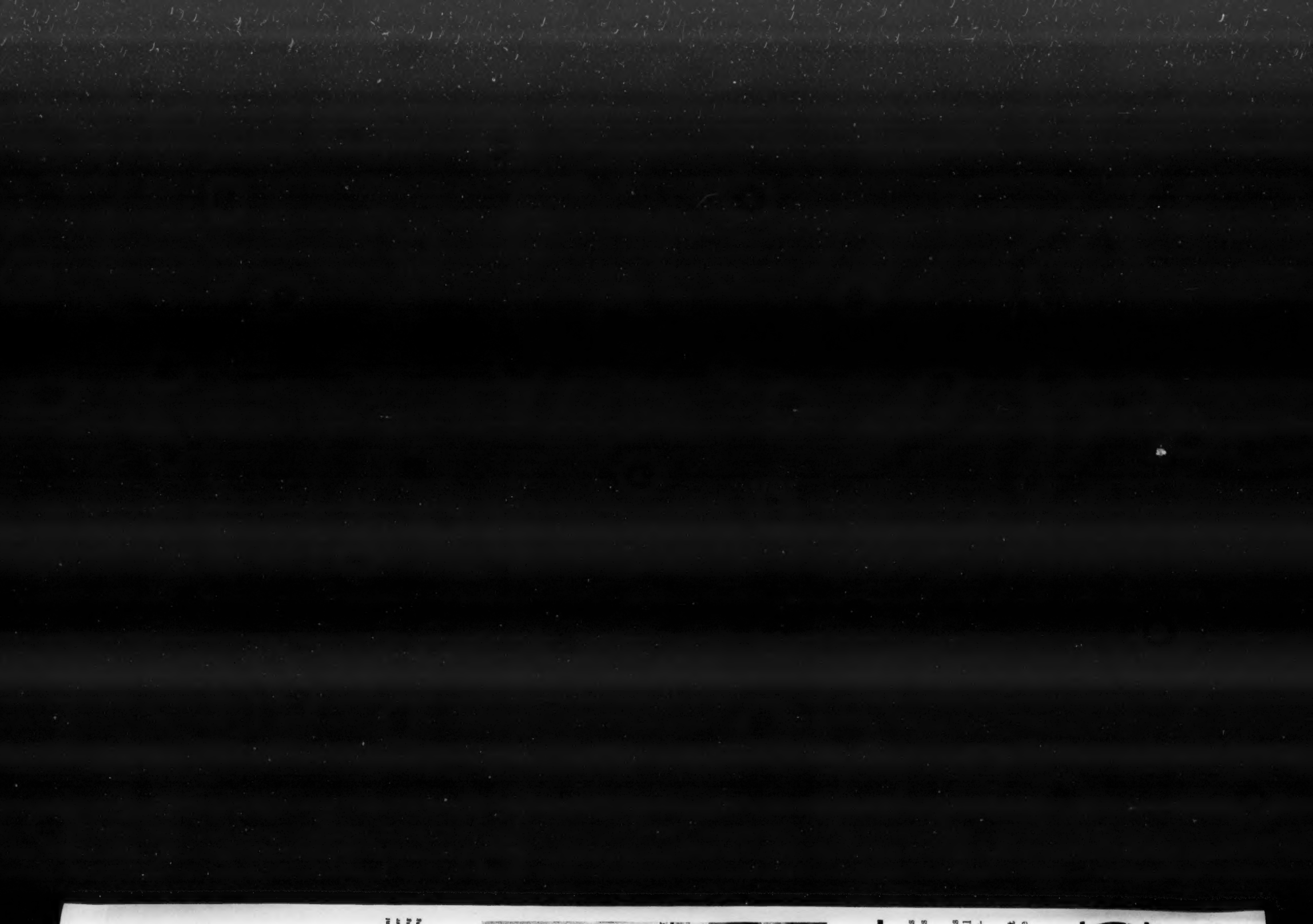
Call in a Fisher Sales Engineer on your present or future control problems. His services are available without obligation.

Fisher Sales Engineers in Every Principal City

LIQUID LEVEL CONTROLLERS ★ PILOT OPERATED REGULATORS ★ GAS REGULATORS ★ PRESSURE REGULATORS ★ PUMP GOVERNORS ★ FLOAT VALVES ★ STEAM TRAPS ★ STRAINERS ★ REFINERY and OIL FIELD AUTOMATIC CONTROLS of SPECIAL DESIGN

FISHER AUTOMATIC CONTROL

FISHER GOVERNOR COMPANY
201 SOUTH FIRST AVE., MARSHALLTOWN, IOWA



EMSCO

EMSCO
A Complete Line of Better Oil Well Equipment

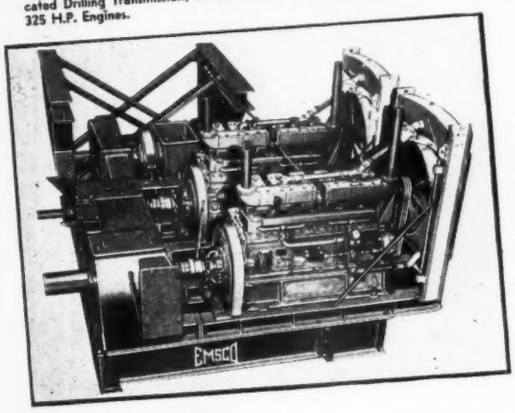
EMSCO
A Complete Line of Better Oil Well Equipment

Emsco Type J M Totally Enclosed Oil Bath Lubricated Drilling Transmission with Dual Oil Pumps.

A STEP AHEAD

Totally Enclosed DRILLING TRANSMISSIONS

Emsco Dual Engine Drilling Power Unit, with Type J Air Actuated Reverse and Friction Clutch; Type J A Totally Enclosed Flood Lubricated Drilling Transmission; and Sub Base for Draw Works; with Two 325 H.P. Engines.



Emsco totally enclosed, flood-lubricated transmissions are the latest departure from the open chains and pump countershaft design—an Emsco development.

Constructed with an all-steel welded, oil-tight case, these transmissions are built to meet all modern drilling conditions.

With machine-cut tooth hardened sprockets, multiple strand precision chain, alloy steel heat-treated shafts, and S.K.F. roller bearings, perfect alignment of parts is assured at all times; thereby producing a minimum amount of wear and eliminating needless readjustments.

Continual lubrication during operation is furnished by two oil pumps supplying seven gallons of lubricant per minute to all parts. An oil filter keeps the oil clean at all times. By shifting multiple jaw clutches the power of either or both engines is constantly available for either the draw works or the slush pump.

Sizes For All Drilling Equipment.

Emsco Type PSG 8-Speed Draw Works, with 4-Speed Rotary Drive Attachment; Type J Reverse and Friction Clutch; two 7¾ x 16 Power Pumps; and two Diesel Engines Driving through Emsco J Type Oil Bath, Totally Enclosed Chain Transmission.

EMSCO DERRICK & EQUIPMENT COMPANY

6701-7101 So. Alameda St., Los Angeles, California, U.S.A. Plants: Los Angeles - Dallas - Houston

All Emsco Machinery and D + B Products Sold Exclusively in Mid-Continent Fields By The Continental Supply Company.

Exclusive Distributor of Emsco Oil Field Machinery in California: The Republic Supply Company of California.

Export Office: Continental Emsco Co., 30 Rockefeller Plaza, New York, N. Y.

Foreign Office and Plant: Emsco Engineering Co., Ltd., St. Albans, Herts, England

BAROID PRODUCTS
HELP INSURE SAFE DRILLING

BAROID
EXTRA-HEAVY DRILLING MUD

AQUAGEL
TROUBLE-PROOF COLLOIDAL DRILLING MUD

STABILITE
AN IMPROVED CHEMICAL MUD THINNER

BAROCO
AN ECONOMICAL, SALT WATER-RESISTING DRILLING CLAY

FIBROTEX
FOR PREVENTING OR REGAINING LOST CIRCULATION IN DRILLING WELLS

Many difficulties which may endanger the safety of your drilling investment can be successfully overcome by proper control of the weight, viscosity and gel-strength of the mud. For this control, BAROID Products have been used for years, in thousands of wells throughout the world.

Use BAROID Products and "go down" safely, quickly, with less wear on equipment. They're the *proved* solution to drilling mud control. Ask a BAROID Service Engineer!

STOCKS CARRIED AND SERVICE ENGINEERS AVAILABLE IN ALL ACTIVE OIL FIELDS

BAROID SALES DEPARTMENT

NATIONAL PIGMENTS & CHEMICAL DIVISION OF
NATIONAL LEAD COMPANY
BAROID SALES OFFICES • LOS ANGELES • TULSA • HOUSTON

They rented 1 - then Bought 5 FLUID-PISTON PUMPS

THIS LETTER Tells you why

W. W. ALLEN — JOSEPH S. MORRIS

ALLEN & MORRIS
DRILLING CONTRACTORS
STEAM AND DIESEL RIGS
ALAMO NATIONAL BUILDING
SAN ANTONIO, TEXAS

August 6, 1937.

Abercrombie Pump Company
Gulf Building
Houston, Texas

Attention: Mr. J. A. Tennant
Vice-President

Gentlemen:

We have recently placed our fifth FLUID-PISTON Slush Pump in service and it is apparently going to give us the same remarkable economy and performance that we have come to expect from these pumps. Our first FLUID-PISTON Slush Pump was delivered by you in February, 1936, and its record in continuous performance since that time has accounted for our placing additional orders with you from time to time since that date.

It will probably interest you to learn how we first became acquainted with the performance of the FLUID-PISTON Slush Pump. Late in 1936 we leased a complete drilling rig from one of our friends, this rig being equipped with an 18" stroke FLUID-PISTON Slush Pump. We drilled five wells with this rig and the total pump expense for the five wells amounted to twelve dollars and some cents. These wells were drilled in Southwest Texas, under drilling conditions with which we were thoroughly familiar, and under which we had accumulated pump expense data on the conventional type slush pumps we had previously been using. The performance and remarkably low operating expense of your pump on these five wells was an entirely new experience for us and prompted our first order to you for a FLUID-PISTON Slush Pump.

The fact that during the last eighteen months we have ordered four additional FLUID-PISTON Slush Pumps, and now have operating records covering approximately 100,000 feet of hole drilled, will indicate our continued satisfaction with your product. We know that we are saving money by using your pumps, and wish you success in your enterprise.

Yours very truly,

ALLEN & MORRIS

By Joseph S. Morris

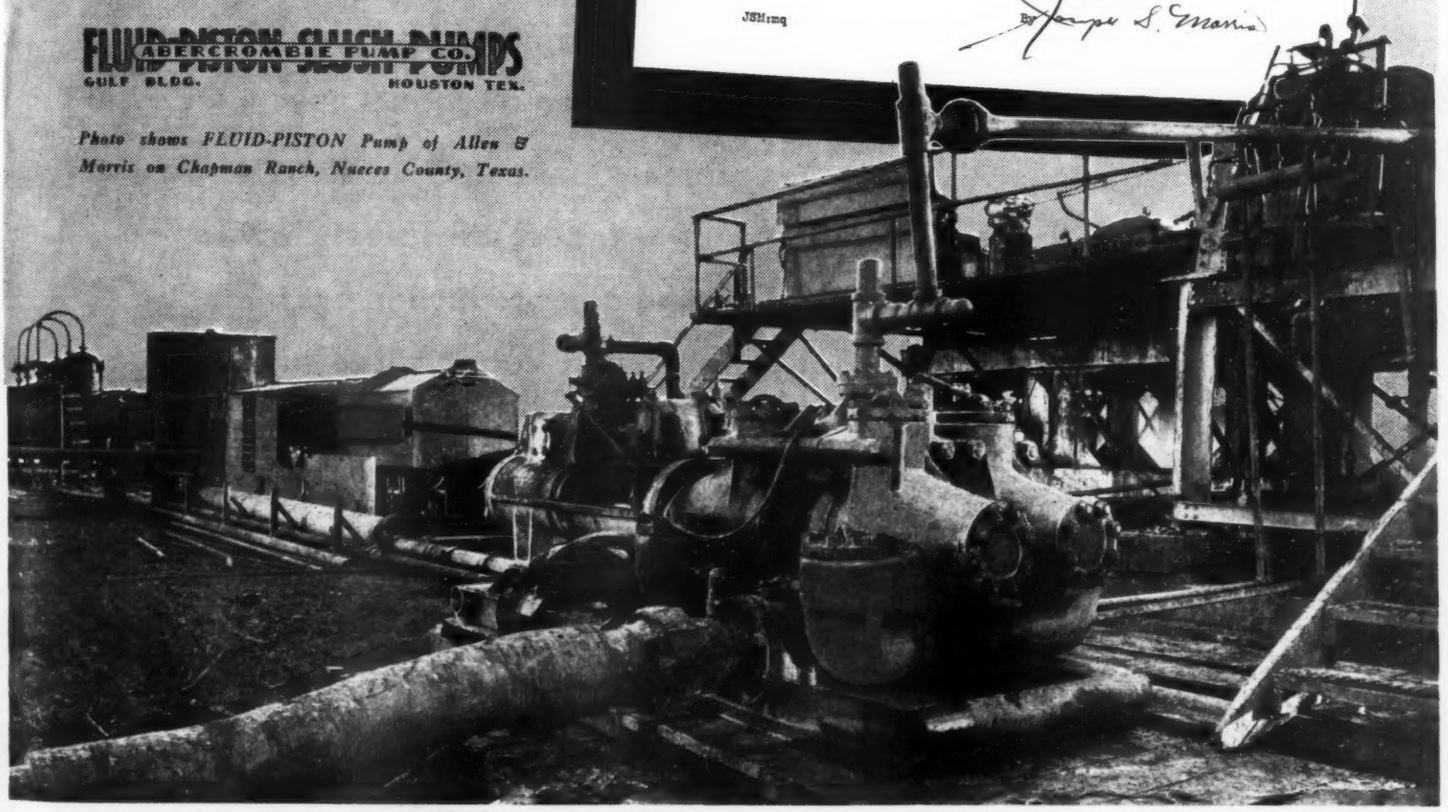
JSM:mq

You will find, by questioning other users of this pump, that this well known drilling contractor's experience is indentical with that of other FLUID-PISTON Pump owners.

The fact is that drilling contractors, the very nature of whose business requires the closest scrutiny of every item of operating cost, are rapidly turning to FLUID-PISTON Slush Pumps because of proven results in dollar savings.

FLUID-PISTON SLUSH PUMPS
ABERCROMBIE PUMP CO.
GULF BLDG. HOUSTON TEX.

Photo shows FLUID-PISTON Pump of Allen & Morris on Chapman Ranch, Nueces County, Texas.



Wherever Oil Men

CONTINENTAL

All oil men know the significance of the familiar Continental sign in the field. It is a symbol of service for the oil man's needs.

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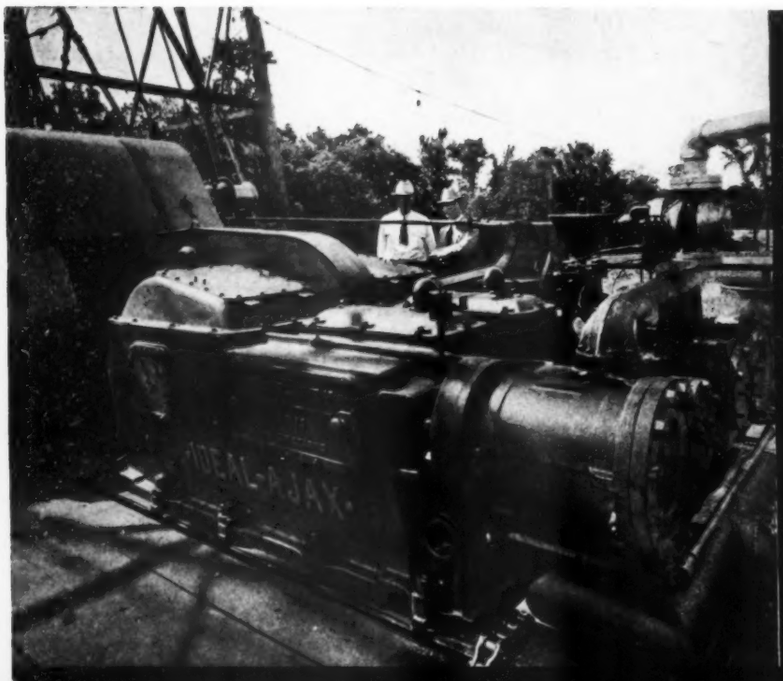

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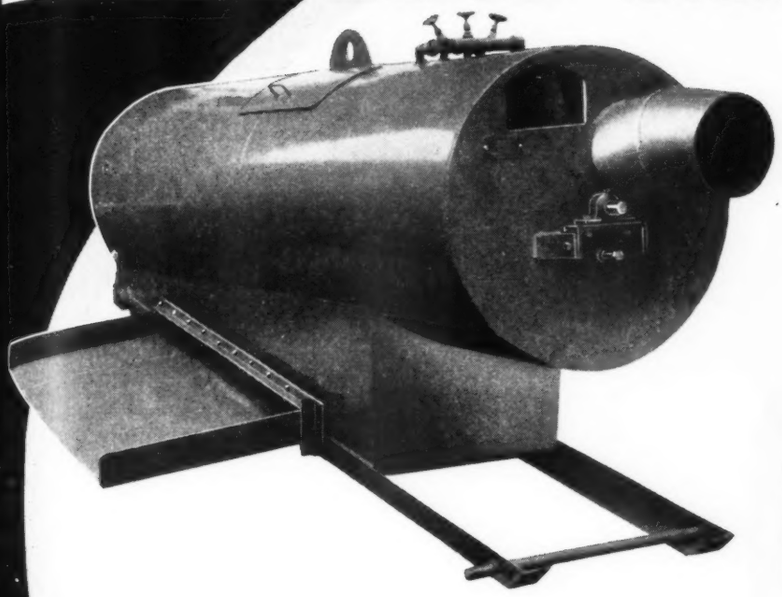

uses flow of DRILLING MUD for MOTIVE POWER

Operated by the gravity flow of the drilling mud against turbine blades, the Hudson-Boucher Automatic Shale Separator requires no other motive power. Complete separation of cuttings from the drilling mud is effected by the rotation of the screen unit as the fluid passes through. Clean mud passes through the screen, down into the return trough, while cuttings are discharged out the open end of the screen cylinder.

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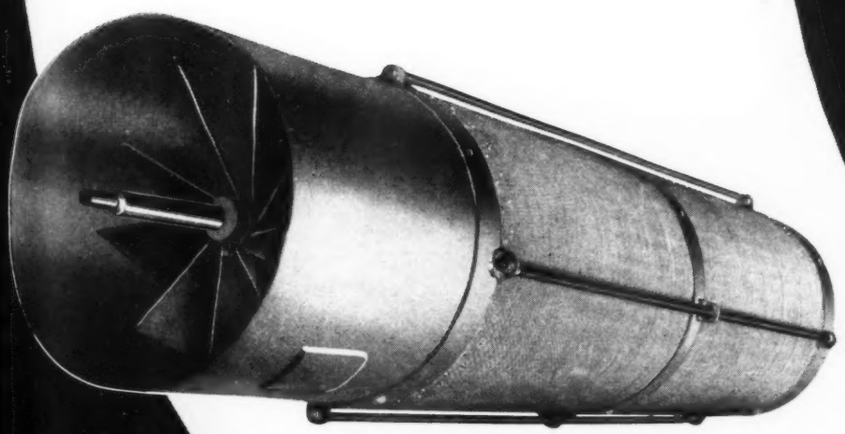

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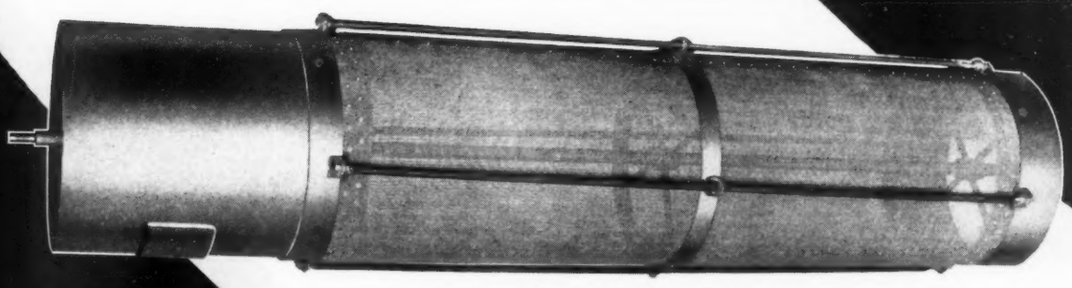

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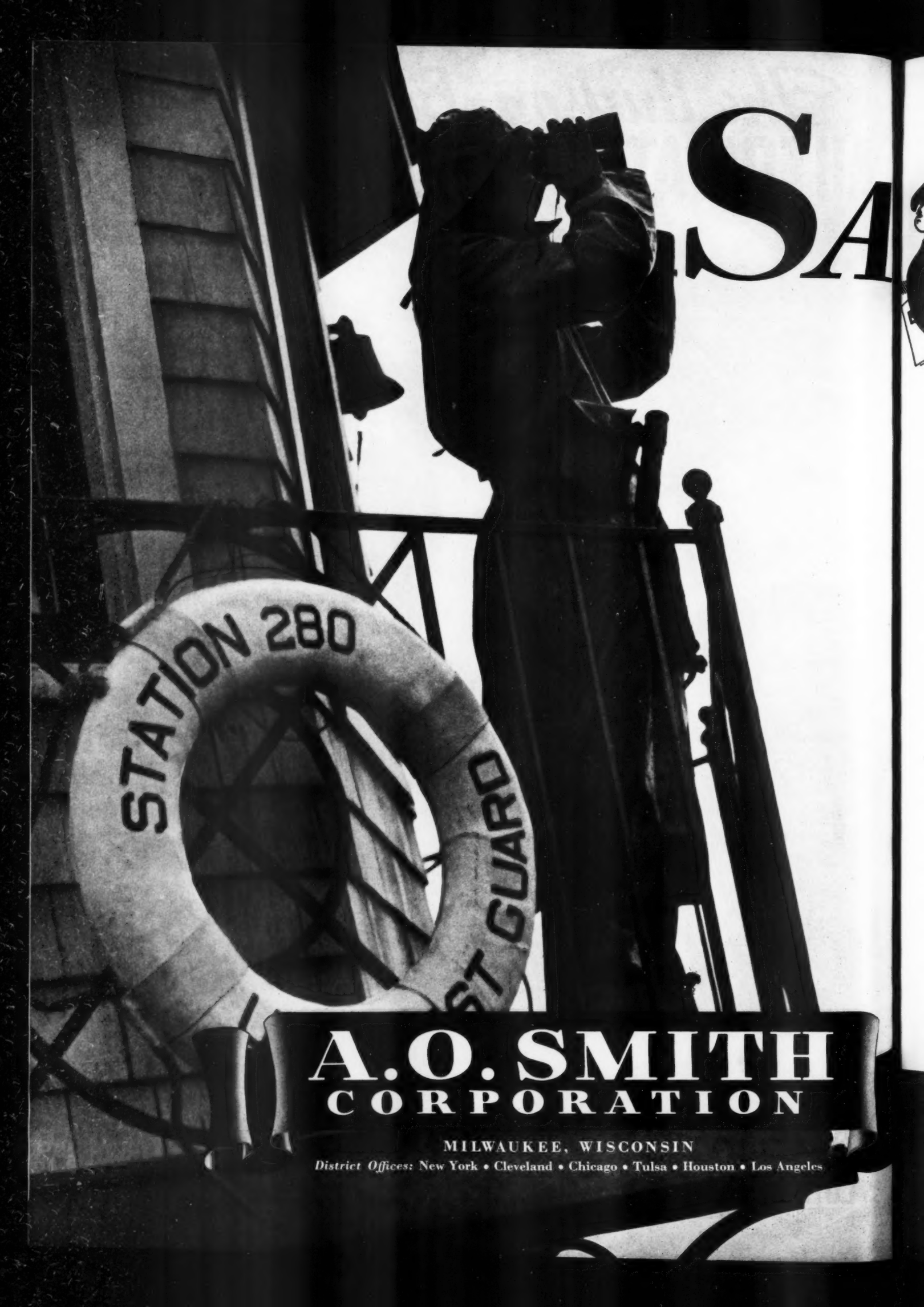

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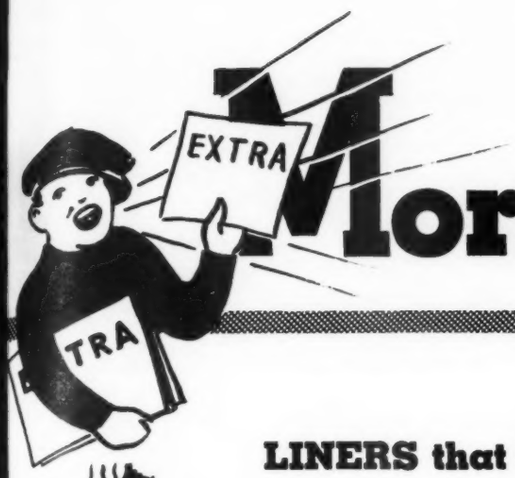
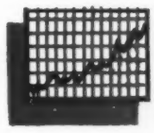


More Liners Hang!

LINERS that look like this **should hang by their neck**

If they don't, excessive wear on the casing,

tubing, **as well as sucker rods,** **will result in**

replacements **and operating costs will go up** 

Lane-Wells Liner Hangers **are cheap positive insurance**

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OIL STATES
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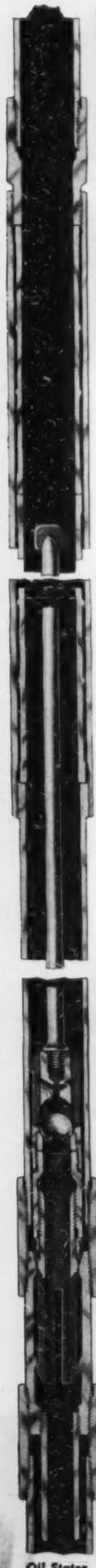
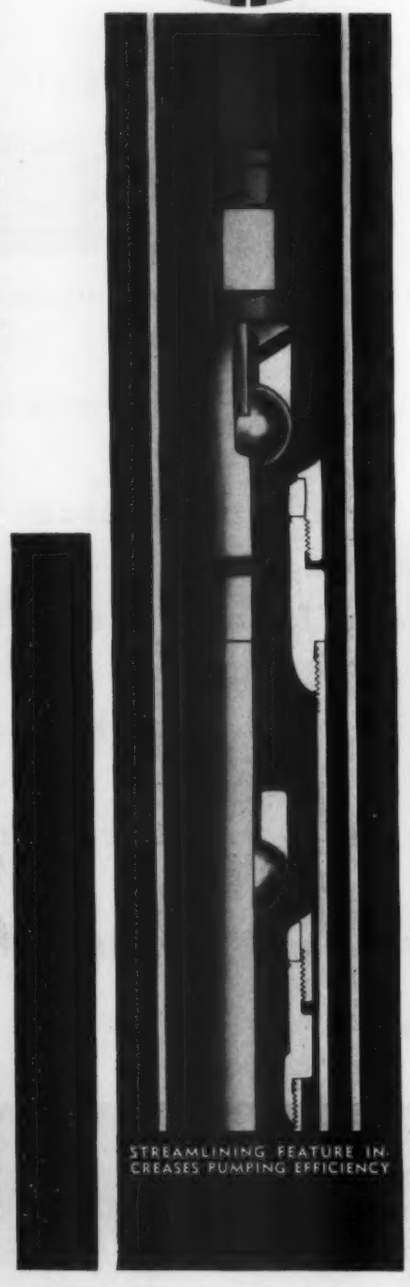


Oil States Tubing Type Liner Pump



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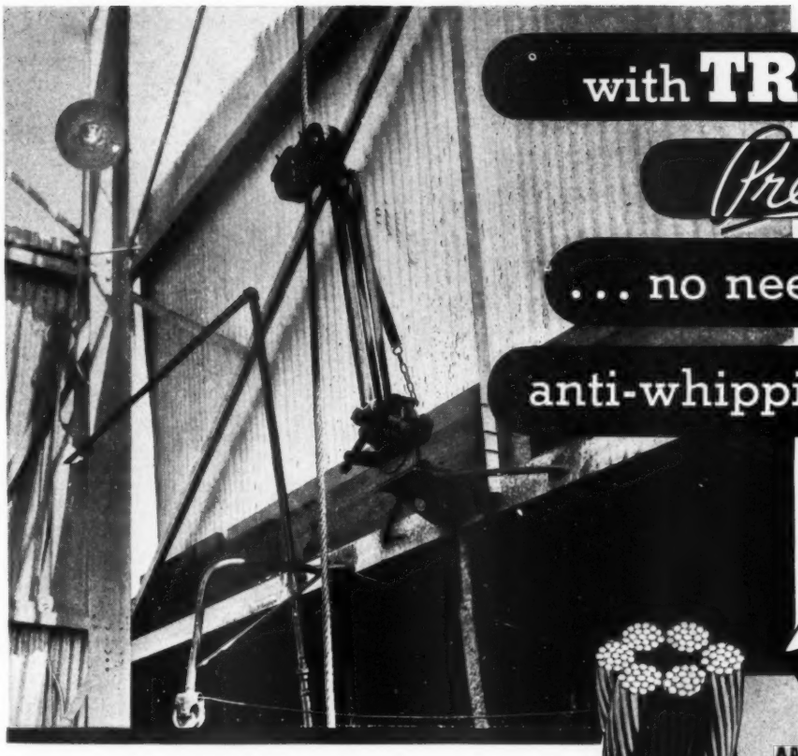

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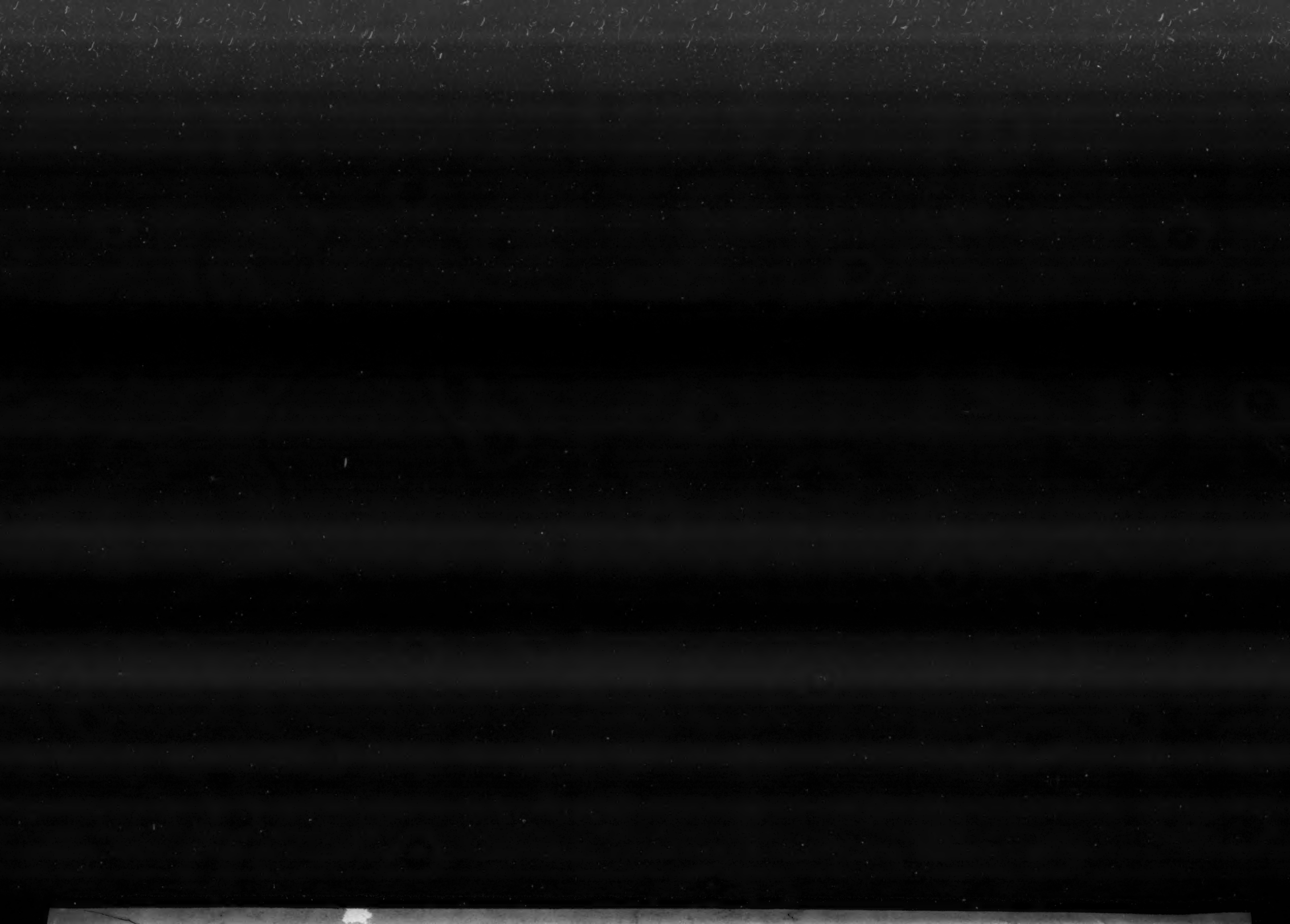
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